

The
NEW MEASURE
For all
MASONRY

STARk
CERAMICS, INC.
CANTON 1, OHIO



5th EDITION

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MODULAR BUILDING STANDARDS ASSOCIATION

This is an all-new edition of the famous Stark Brochure.

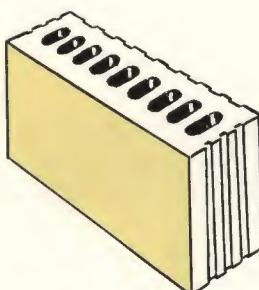
Previous editions of the Brochure have proven to be a useful tool to Architects, Specification writers and Contractors. We feel that you will find this new edition even more useful, more complete and more convenient because of its 'file' size, complete indexing and its wider use of color.

You will note that this 5th Edition is "sectionalized" . . . The first section deals with the history, use and advantages of the Modular concept as well as principles of modular drafting and complete detail drawings that cover virtually all masonry conditions.

Other sections include: Drawings and dimensions for all tile shapes; Complete specifications as well as short form specifications; All colors available including the dramatic accent colors; An all new section of interesting and unusual ideas and applications for Structural Glazed Facing Tile.

If you have any questions or if you desire additional information, your local Stark Ceramics distributor will appreciate the opportunity to be of service.

We trust that you will understand our pride and pleasure in making this edition available to you.



STARK
CERAMICS, INC.

C A N T O N 1, O H I O

Your Stark Ceramics representative is at your service with any information as to price, availability, shade and sizes. For the name of your Stark representative, anywhere in the United States or Canada, please contact Stark Ceramics.



Stark Ceramics' present position in the structural glazed facing tile field is a reflection of the consistently high standards set by the original management and carried out by the most experienced production team in the industry.

Stark's steady growth, since 1910, is a result of constant pioneering in the fields of research and product development.

Listed here, are just some of the product features and facilities that help assure you of consistently high quality, service and uniformity of product.

MATERIAL—Only the finest fire clay and ceramic glazes are acceptable . . . shaded, graded and inspected to rigid standards.

TESTS—Ceramic and 904 Glaze pass the ASTM autoclave, imperviousness, opacity, chemical resistance and absorption tests. All Stark units meet the load-bearing requirements of Federal, State and Municipal codes. Test data available upon request.

MODULAR SIZES—Stark Structural Glazed Facing Tile are made in modular sizes to give dimensional co-ordination with various building materials used. This means better buildings at lower cost, with simplified layout, elimination of waste of labor and materials and reduction of construction time.

VERTICAL CORE—Produced mainly in vertical core type to give better bond, easier and less costly cutting and good bed joints.

SHIPPING—Stark has a railroad switch line running the entire length of the shed into the plants for carload shipments and is equipped with several truck loading docks to accommodate the loading of several trucks at a time. All loading is done under roof assuring dry loading in all types of weather.

STARK'S GUARANTEE

Stark Ceramics, Inc., guarantees that any ware manufactured by it will conform to the quality standards, tolerances and grading rules established by the Facing Tile Institute. If it can be established within reasonable time, but in no event longer than one year, that any material does not conform to these standards, Stark Ceramics, Inc., will replace defective units. The measure of damage after ware has been installed will be the replacement of defective units without charge at the factory, but no charge for labor or other expenses required to repair defective ware or damage occasioned by it will be allowed. This guarantee is expressly in lieu of all other guarantees and warranties expressed or implied and of all other obligations or liability on the manufacturer's part, and the manufacturer neither assumes nor authorizes any other person to assume for him any other liability in connection with the sale of his ware.

In no event will replacement of Off-Grades be made after installation. No replacement will be made of ware chipped on job or after installation.

MODULAR MASONRY

M

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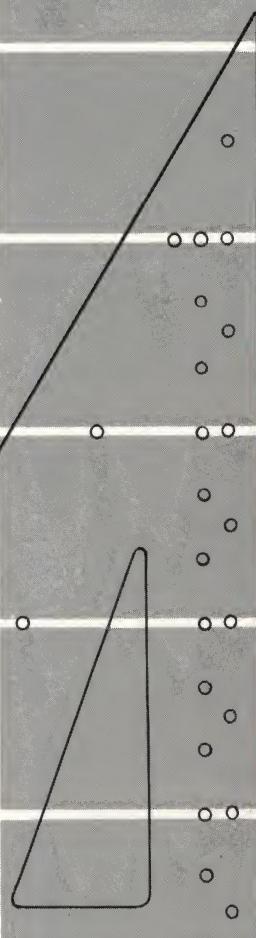
IDEA FILE

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**MODULAR
MASONRY**

STARK

CERAMICS, INC.
CANTON 1, OHIO



THE ECONOMIES OF

MODULAR



Sizes in conformance with the recommendations of the MODULAR BUILDING STANDARDS ASSOCIATION

30,000 different products are estimated to represent the total number of building construction items from which architects and engineers in the past have been required to select and coordinate sizes.

Until recently, little has been done to encourage manufacturers to produce products with dimensions coordinated with each other, forcing the architects and engineers to specify construction systems that necessitated costly cutting and fitting on the job. This unproductive expense is no longer necessary.

We estimate that buildings constructed of all modular materials will realize a savings exceeding 10% of similar buildings constructed of non-modular materials. We believe this to be a very conservative estimate because approximately 50% of the cost of the average building is site labor. Dimensional coordinated materials obviate the need for special cutting and fitting on the construction of the job. Not only do lower costs result, but since the materials fit each other, HIGHER QUALITY CONSTRUCTION RESULTS.

One out of five architectural firms (AIA Survey) in the United States is already using a system of drafting that takes full economic advantage of all modular dimensioned materials on the market, yet does not prohibit the use of conventional

sized materials if modular should be currently unobtainable in any local area.

Modular working drawings benefit everyone involved with a building project. Architects realize savings of up to 25% in the preparation, checking and supervision of their work. Contractors realize considerable savings in the time required for quantity take-off for bidding on projects and realize profits from easier lay-out of the work, less supervision of the workmen, and faster moving projects. Owners receive their building for occupancy sooner and have better constructed buildings for less cost.

Modular Measure works for all buildings . . . from an \$8000 house by Brown and Wright Architects in Washington, D. C., to a \$30,000,000 Medical Center for West Virginia University by C. E. Silling and Associates . . . When plans are so produced, it is the only system that enables the architect, the engineer, and the contractor to think alike during all phases of the project.

MBSA, MODULAR BUILDING STANDARDS ASSOCIATION, believes the only obstacle to immediate universal adoption of Modular Measure by the design professions lies in the seeming reluctance of some to review its advantages. The benefits are built-in for all who use it, whether in manufacturing, assembly at the site, or in planning.

J. A. JONES CONSTRUCTION CO.

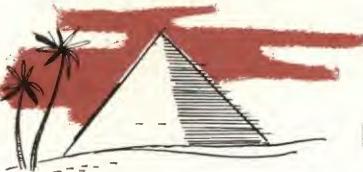
"The best comparison we had of the value of modular coordination was in the construction of two hospitals built simultaneously. They were built in near-by towns and out of different architects' offices. . . . On the non-modular job brick had to be cut or buy specials to fit many window and door jambs costing approximately \$81.00 per thousand . . . while on the modular job our cost records show approximately \$42.00 per thousand."

Contractor James E. Coombs of Baker and Coombs, Morgantown, West Virginia.
"We find that modular measure permits one masonry foreman to supervise a greater number of workmen. Fewer errors are made; considerably less time is required for constructing openings in the wall; the old problem of mechanical bonding is practically eliminated. Saw time for facing materials is reduced by almost 50%. Over-all engineering layout time for the job is reduced by 30% to 50% . . . Modular sized masonry develops savings on masonry alone that will amount to 7% to 10%."

C. E. Silling of C. E. Silling and Associates

"I wouldn't do anything other than make modular plans even if there were no modular materials. We prepare estimates on preliminaries at $\frac{1}{16}$ " scale and they hold water because final sizes do not vary. We have done large hospitals and intricate laboratory buildings in drawings at $\frac{1}{16}$ " scale. I would never have dreamed of such small scale documents had it not been for Modular Measure..."

(The above excerpts are taken from a report prepared at the request of the House of Representatives' Committee on Veteran's Affairs 1959)



MODULAR MASONRY

The principles of modular masonry and construction are as old as man's first planned structures. The Pyramids of Egypt and the classic Grecian Temples are examples of planned, coordinated building components brought to the job site ready to construct.

It wasn't until the late 1930's, however, that any concentrated effort was made to standardize American building procedure and products. In 1938 a committee composed of leading Architects, Designers and Building Product Manufacturers outlined the modular concept.

Stark Ceramics Inc. is one of the pioneers of the modular concept. Through the years, our products have been designed and produced to meet the qualifications of modular planning and construction.

This brochure was designed to help Architects, Designers and Craftsmen to more fully understand the many advantages to be found through modular masonry construction. These advantages result in:

1. Lower product cost through mass production.
2. Reduction of waste labor and materials.
3. A reduction in drafting time.
4. Greater ease in masonry unit take-off from specification.
5. Greater accuracy in laying out tile on the job.
6. Earlier use of the structure through reduction in construction time.

It is our feeling that modular construction is not a limiting factor to the designer but rather a useful tool to produce better buildings at a lower cost. The modern modular concept may be viewed as distinct but integrated steps in the construction of a building.

MODULAR PLANNING

... often referred to as "Dimensional Coordination" of building materials. This means, simply, that building products manufactured at widely separated points, may be brought together at the job site with the assurance that they will assemble with a minimum of cutting and fitting.

STANDARD MODULE

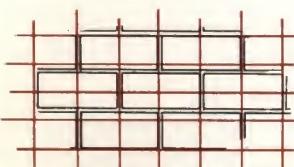
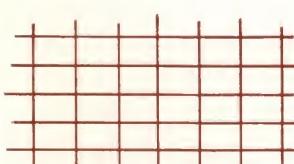
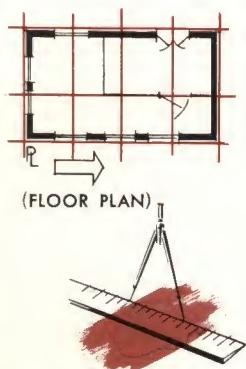
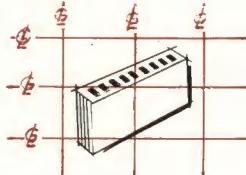
... after long study and consideration, the 4" unit was selected as the standard increment or module. This 4" module offers the widest practical standardization consistent with present building practice. It is used as the dimensional increment for both masonry unit and for structural layout.

STANDARD GRID

... in all cases of dimensional coordination, it is necessary to start with a standard unit of spacing. Here again, the 4" module serves as a uniform grid to which building layout and details are referenced. A 4" by 4" grid serves as a quick, convenient guide for the architect and draftsmen and offers a uniform method of establishing the relationship between the details and the dimensions of the building.

MASONRY

... All details in modular drafting begin with grid line. When making modular masonry drawings, one must realize that masonry units are of uneven measurements in inches and fractions of inches. The nominal (or common usage) size of masonry is stated to include the thickness of the mortar joint — for example: A tile with nominal dimensions of $5\frac{1}{3}$ " x 12" is actually $5\frac{1}{16}$ " x $11\frac{3}{4}$ ". The height of the tile face is designed so that a



tile $5\frac{1}{4}$ " lays up 3 courses in 16" including the mortar joints. The $11\frac{3}{4}$ " length of the tile face is designed to furnish 4 units in 48" horizontally, including the mortar joints.

The use of a 4" module applies to room locations, room sizes, position of partitions and placement of doors and windows. Departure from modular detailing necessarily results either in adjusting joint thicknesses or in additional cutting of units that results in increased costs.

WINDOWS

... Current usage indicates a high frequency in the selection of windows that occur in multiples of 8" both in width and height.

Height

... from 1'-4" in multiples of 8". Actual masonry openings 2'-5 $\frac{1}{3}$ " to 9'-5 $\frac{1}{3}$ ". (To accommodate modular windows currently available an additional $1\frac{1}{3}$ " must be added to the window opening and as shown on the following drawing where steel sash windows occur.)

Widths

... from 2'-0" to 8'-0" in multiples of 8" including 3', 5', and 7' openings. Actual masonry openings in steel sash need to be $\frac{7}{8}$ " wider than the modular dimension.

Important

... in general, detailing and layout will be simplified if the head or lintel of masonry openings are located in multiples of 16" from the base line. Otherwise, the Mth joint or lintel course (see definition below) is assumed to be located in either an even or odd 8" multiple from the floor line.

DOORS

... for many purposes a 7'-0" door height will suffice. The masonry opening should be 7'-1 $\frac{1}{3}$ " (16 courses of 6T facing tile). Door widths generally range as follows:

2'-4"	4'-8"
2'-8"	5'-0"
3'-0"	5'-4"
3'-8"	6'-0"

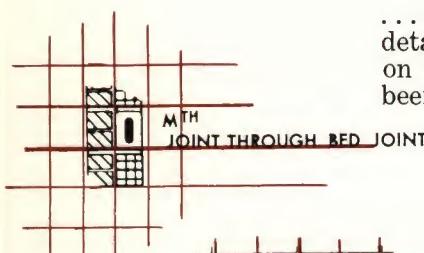
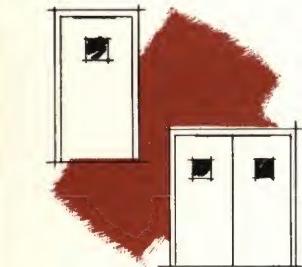
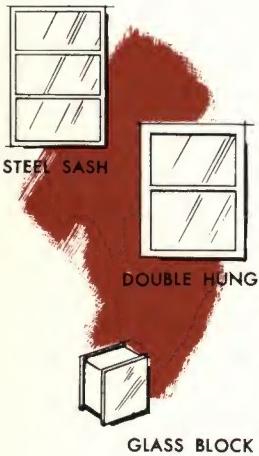
The masonry openings will generally be 4" wider. Many jambs in current use are metal, which provide a "surround" for the Structural Facing Tile, thus requiring no shapes at the doors.

DEFINITIONS

... To establish a ready reference between grid-lines of the architectural detail and the construction details for windows and door openings shown on the accompanying drawings, the following gridline definitions have been established:

Mth JOINT or through bed joint (Fig. 1) may assume two positions at the head of masonry openings. This Mth joint is a common joint that occurs where the joint on the exterior coincides with the joint on the interior masonry. IN GENERAL, the detailing and layout will be simplified if the head of the masonry opening or Mth joint is located in multiples of 16" from the floor line or base line.

FIELD HEAD JOINT ... is established when the pattern is laid in the base courses. 6T units nominal length 12" results in a field head joint 12" on centers.



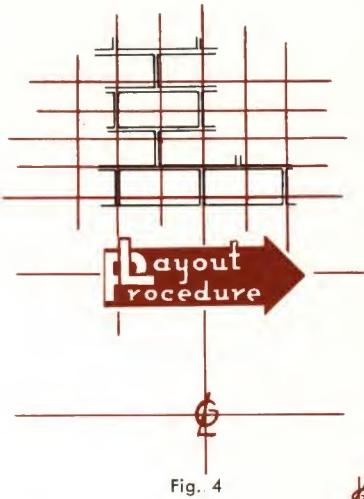


Fig. 4

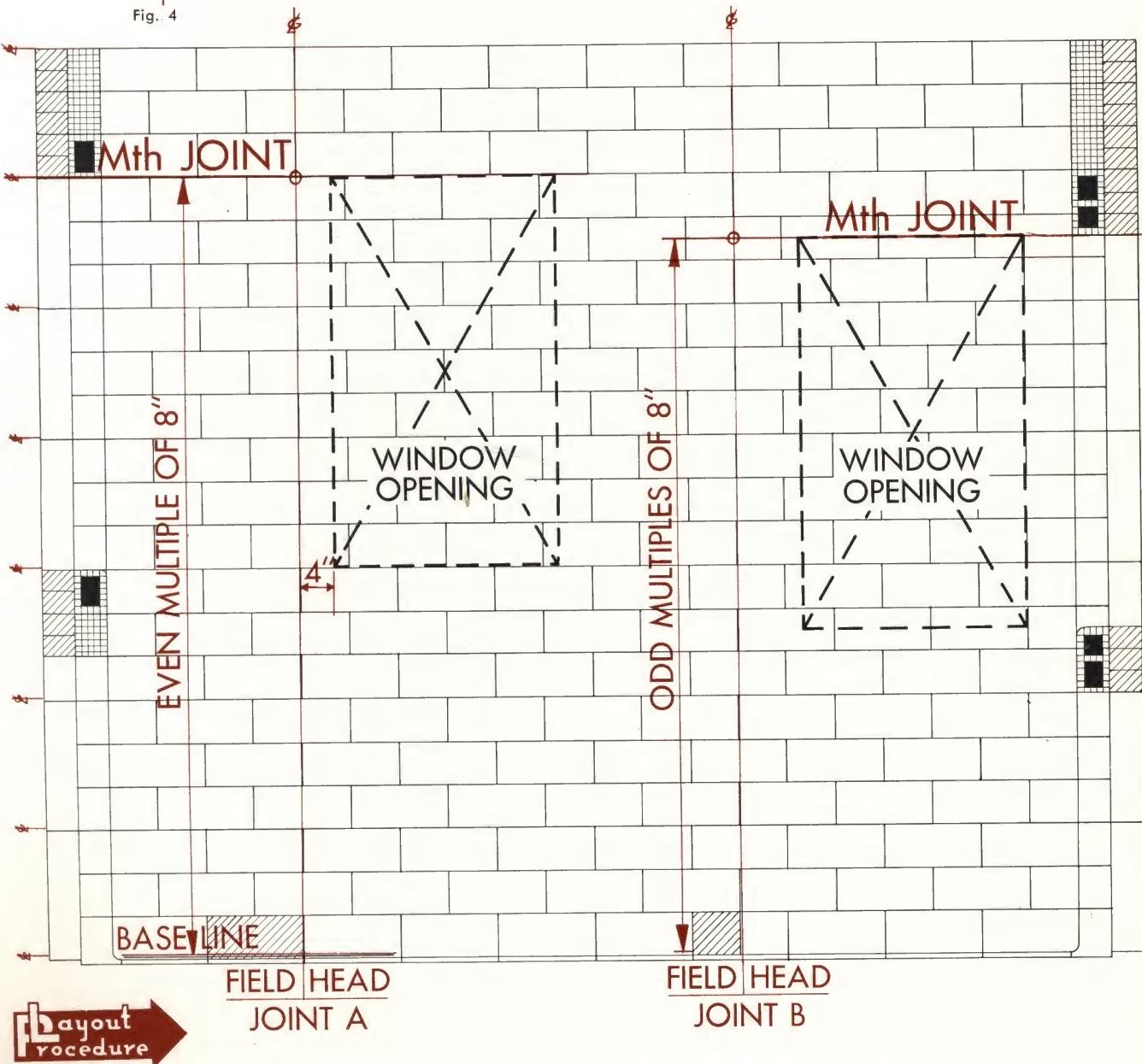
FIELD HEAD JOINT "A" occurs on the grid above the intersection. See Fig. 2 or 3.

Window and door openings are to be located on or near a field joint. Openings can be placed in three positions namely, on the field joint or field joint plus 4" or located at a field joint plus 8".

See Fig. 3 for a schematic demonstration of the above definitions. THIS SCHEME OF MODULAR REFERENCING PERMITS OPENINGS TO BE READILY LOCATED IN PLAN IN MULTIPLES OF 4" AND IN ELEVATION IN MULTIPLES OF 8".

LAYOUT PROCEDURE SYMBOL... indicating the direction of all layouts, from left to right. (Fig. 4)

SYMBOL or major grid line (Fig. 4). Shown in red on drawings to help simplify locations of grid lines. In plan the major grid is prepared on a grid pattern 12" by 12" and in elevation the major grid is developed on a grid pattern 12" by 16" (3 courses in 16").



DEMONSTRATION OF GRID LINE DEFINITIONS

Fig. 3

CONSTRUCTION DETAILS

The construction details that follow are based on the modular layout. Having determined the position of the Mth joint (at lintel course) and locating the nearest field joint to the left of the opening, the architectural detailer, tile estimator or masonry layout man is in a position to use these drawings to determine the nature of the masonry surrounds: shapes required and the cuts to be made.

EVEN FOR NON-MODULAR LAYOUTS THE DETAILS WILL PROVE USEFUL AS AN APPROXIMATE GUIDE TO PIECES AND SHAPES REQUIRED. A preliminary inspection of the opening details will reveal to the user which details require a minimum of cuts and shapes.

A coursing table is contained in this section for additional aid to the detailer or layout man. (See page M-13)

It is well to remember that on all elevations the joint pattern is maintained below the sill and above the lintel and that no cutting is required except where rooms are on an increment other than 12" multiples. In this case the cutting would be made in the left hand corner.

On many of the details two elevations are shown. The start of the first course at the base with a full unit causes certain joint and miter conditions as shown (See Fig. 5). Whenever the wall is started with a half length unit, the entire joint pattern is effected and the miters must be made to suit, consequently, the two elevations. (Noted as course "A" and Course "B")

Layouts have been prepared for both common and stack bond. Width of opening are in multiples of 4". Height of openings are in multiples of 8" except where steel sash windows are shown.

MODULAR LAYOUT

As in all masonry, careful study is made in working a design of joint patterns around masonry openings. The design of the corner of miter unit often offers problems as to the type of miter needed to fit the condition.

TWO KEY DRAWINGS SHOW EVERY CONDITION THAT MAY EXIST IN MODULAR LAYOUT OF FACING TILE AS WELL AS ...

- All Jamb conditions
 - All Sill and Lintel conditions
 - All Miter conditions
- } M15 and M16

LINTEL and SILL LOCATION

The elevation of Page M15 establishes the Mth joint or lintel course on an *EVEN* multiple of 8" from the floor or base line.

The elevation of Page M16 establishes the Mth joint or lintel course on the *ODD* multiple of 8" from the floor or base line.

(EVEN MULTIPLES OF 8" OFFER GREATER SIMPLICITY)

To achieve 4" flexibility, in height, four different sill and lintel units must be furnished. The two elevations on pages M15 and M16 show all of these units either in the sill or lintel position.

Page M15	Bullnose 6P10	Square 6P10
Page M15	Bullnose 6T20	Square 6T10
Page M16	Bullnose 6N20	Square 6N10
Page M16	Bullnose 6W20	Square 6W10

JAMB POSITIONS

Three window openings are placed in three different grid positions. The masonry opening on the left side of the elevation is placed on the field joint or a multiple of 12". The middle opening is located on a grid 4" to the right

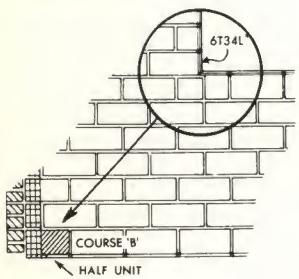
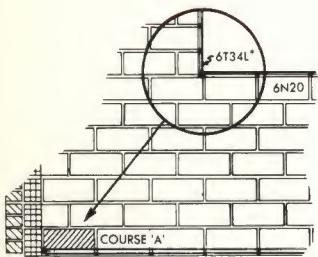
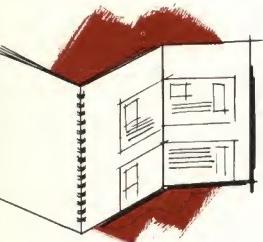


Fig. No. 5

of the field joint and the third opening is placed 8" to the right of the field joint. (Indicated as J1, J2 and J3—Also see key detail M12).

(JAMBS LOCATED ON MULTIPLES OF 12" OFFER GREATEST SIMPLICITY.)

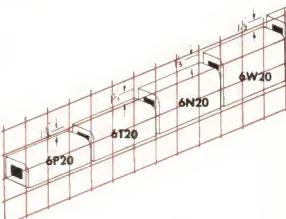


Fig. No. 6

MITERS OR CORNER FITTINGS

Two separate elevations are shown on both of the details on Pages M-15 and M-16. The size of the wall and location of openings are identical but the joint patterns are different. This is caused by the manner in which the walls have been detailed or started at the base course. One elevation is shown with a full unit while the other is shown starting with a half length unit.

(TWO MITERS ARE OMITTED IN EACH OPENING WHEN SQUARE LINTELS ARE USED.)

NON-MODULAR LAYOUT

... TWO KEY DRAWINGS OFFER VALUABLE INFORMATION

On jobs that are not planned with 4" flexibility in mind, these same details will prove useful as a guide to pieces and shapes required.

Sill and lintel locations may require special cut pieces. The four different height sill and lintel units supplied by Stark Ceramics, Inc. will provide for $1\frac{1}{3}$ " flexibility or $1\frac{1}{16}$ " and can generally be used without any additional cutting on the job.

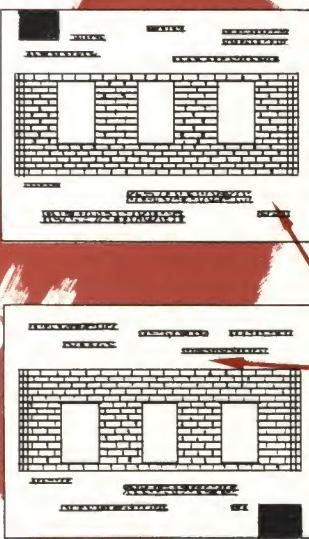
(THE ARRANGEMENT OF SILL AND LINTEL WITH $1\frac{1}{3}$ " FLEXIBILITY IS SEEN IN FIG. 6 OR ON PAGE M12)

Because sill and lintel height are non-modular, it may be necessary to use a nominal 8" height unit on the sill or a nominal 4" high unit on the lintel. Different height sill and lintel units require some study of the miter treatment.

REMEMBER ... These drawings show every condition that may exist on the job.

Drawing in this position shows the joint pattern, sill, lintel and miter conditions on jobs with modular layout.

AND, drawing turned (upside down) to this position, shows the joint pattern, sill, lintel and miter conditions on jobs where shapes and units that offer $1\frac{1}{3}$ " flexibility combined.



Drawing M-15 or M-16

FIVE FUNDAMENTALS OF MODULAR DRAFTING

TO THE DETAILER OR DRAFTSMAN WHO SAYS "WHERE DO I BEGIN?"

To assist the detailer who is unaccustomed to Modular Drafting, the following excerpts have been taken from "The Five Fundamentals of Modular Drafting" prepared by the office of Modular Coordinator of the American Institute of Architects.

1. THE FIRST THING you will want answered about modular drafting is "Where do I begin" When does it come into the picture?

For you, in the role of the designer working preliminary sketches, modular measure has no effect other than this one point — if you make use of one or more *design-modules* in laying out the building, be sure that they are in multiples of four inches, such as 16", 40", 7'-8", 20'-0" and so on. *THAT IS RULE NUMBER ONE*. Any 4-inch multiple will do, the idea being simply to make it easier for the draftsmen, later on, to convert your preliminary sketches into scale-drawings, dimensioned in multiples of the basic 4-inch module.

2. A DETAIL BEGINS WITH THE GRID-LINES. As a detailer, you must set them down first whenever you do a detail of any kind. This is to be an inviolate rule for any drafting team which intends to produce modular drawings. There are no exceptions; even hasty free hand sketches of only part of a detail, jotted down during discussion or study of a problem, must all start with an indication of the 4-inch modular grid. An underlay showing the grid will not do, although it can be useful as a guide in the grid lines.
3. SMALL-SCALE LAYOUT DRAWINGS . . . Plans, sections and elevations give nominal or grid dimensions. As draftsmen, you must realize that the grid is still there even though it has to be invisible when the building is drawn at such scales. These drawings show nominal surfaces: nominal walls and partitions, nominal finished floor, etc. This will mean that, for the most part, lines indicating such surfaces will coincide with the invisible gridlines. Thus the distance between the arrow at one end of a dimension-line and the arrow at the other end will be some multiple of 4 inches.

Do not interpret this to mean that such things as nominal 6 inch stud partitions and nominal 10 inch cavity walls should be increased arbitrarily to 8 inch and 12 inch. Use the nominal dimensions as originally intended. And, although nominal finished-floors must be located on gridlines, *floor thickness* need not be 4 inch multiples; Modular Measure introduces no requirements as to ceiling heights.

4. DOTS AND ARROWS . . . at the end of dimension lines have a definite significance on Modular Drawings. This results from the fact that you do not show the 4 inch modular grid on small scale plans, section and elevations. In referring back and forth between these layout drawings and the large-scale detail drawings, it is important to know exactly where any particular detail fits into the building as a whole. The modular grid makes this clear and simple, even when the same detail occurs at several different locations.

This is possible only because the grids appearing on the various detail drawings actually represent small portions of the three-dimensional over-all building grid, already described in connection with Rule Number Three. A great many of the lines to which you dimension on the small-scale layout drawings will coincide with the building grid. In other words, they will be gridlines; it is therefore important that you identify them as such. Rule Number Four requires that a dimension taken to a gridline be indicated by an arrow; but where a dimension-line terminates off the grid, a dot must be used instead. (See Fig. 7)

(NOTE . . . The DOT AND ARROW system of dimension was not used in the general layouts of the accompanying drawings because the grid lines and grid dimensions are clearly shown in RED whereas the actual dimensions are shown in BLACK)

5. VERTICAL DIMENSIONS are coordinated by the final rule of modular drafting, which fixes floor heights as follows:

Nominal finished floor is a gridline; actual finished floor is located $\frac{1}{8}$ " below a gridline (see Fig. 7), with one exception . . . In wood-frame construction the top of the sub-floor or of slab-on-ground coincides with a gridline.

Specify Modular-Size Materials

Although Modular Measure helps the draftsmen to produce concise working drawings and generally simplifies job layout for the contractor, the real pay-off in terms of construction economies, requires modular drawings *plus* modular building materials. Unit sizes are then automatically co-ordinated with the dimensions of the building. Specifying modular products will reduce material waste and simplify the work of everyone . . . Estimator, Engineer, Superintendent, Foreman and Craftsman.

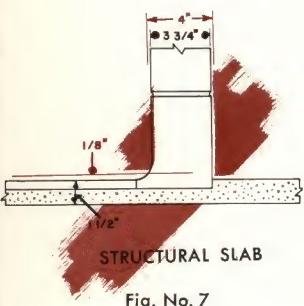


Fig. No. 7

LAWS INCORPORATED

House of Representative Report No. 1890.

84th Congress, Covering 2nd Session Authorizing
Construction For Military Departments

MODULAR CONSTRUCTION

The Committee has had representations made to it at various times concerning the desirability of utilizing modular design as a construction device.

MODULAR MEASURE simply uses a 4-inch unit of measurement in the planning of buildings. A module is a dimensional unit that is used repetitively. Manufacturers of building materials are now changing to stock sizes that are multiples of 4 inches. Thus far the most extensive conversion of buildings to modular sizes has been with concrete block, wood and metal windows, brick, wallboards and insulation, flue linings, glass block, certain finish materials and related products. This conversion has not been extended by all industries or all manufacturers of building materials but certainly the trend is in the right direction. These modular-size materials fit together with greater ease and efficiency when used in a building that has been planned for modular coordination.

This increased construction efficiency means lower building costs. Present experience with modular coordination indicate that it will save the American people millions of dollars per year in the cost of new buildings for industrial, government and military use. These savings result from less time wasted in cutting and fitting material at the construction site, less pieces of new materials cut off and thrown away, quicker and simpler preparation of the blueprints, fewer building product sizes to be carried in stock, and greater ease in actual construction.

The modular measure was proposed in 1936 by A. F. Bemis, Boston industrialist, who had been studying ways of reducing the cost of housing. The first American Standards of Modular Measure in building were published in 1945 and the system has been growing at rapid strides ever since. The presently generally accepted module is 4 inches and gives the designer, the building material supplier, and the constructor ample freedom. Modular colonial-type houses, modular gothic churches, modular contemporary schools, hospitals, and office buildings, now exist throughout the country.

The use of Modular Coordination is endorsed by such organizations as the American Standards Association, American Institute of Architects, Associated General Contractors of America, and is being used extensively by architects and industry throughout the country.

Modular Coordination permits structures to be built by conventional construction, on site fabrication, or prefabrication methods.

On the basis of the foregoing, the committee inserted a new section 417 which is designed to encourage, wherever feasible and practicable, MODULAR DESIGN. The committee expects that substantial economies can be effected in many of the repetitive-type structures which constitute an important part of military construction. The insertion of this new section will serve as an encouragement to the departments to permit as wide as possible usage of modular design consistent with the many other considerations which are involved in military construction.

PUBLIC LAW 85-104

85th Congress, H.R. 6659
July 12th, 1957

An Act — To extend and amend laws relating to the provision and improvement of housing, to improve the availability of mortgage credit, and for other purposes.

TITLE IV — Public Housing
Low Rent Housing

SECTION 401

(c) Section 15 (5) of the United States Housing Act of 1937 is amended by adding at the end thereof a new sentence as follows:

Every contract made pursuant to this act for loans, annual contributions, or capital grants, with respect to a project for which the preparation of plans, drawings, and specifications has not been started or contracted for prior to the date of enactment of the Housing Act of 1957, shall require that such plans, drawings and speci-

fications follow the principle of MODULAR MEASURE in every case deemed feasible by the Public Housing Agency in order that the housing may be built by conventional construction, on-site fabrication, factory pre-cutting, factory fabrication, or any combination of these construction methods.

HOUSING ACT OF 1957

Report of the Committee on Banking and Currency to accompany H.R. 6659

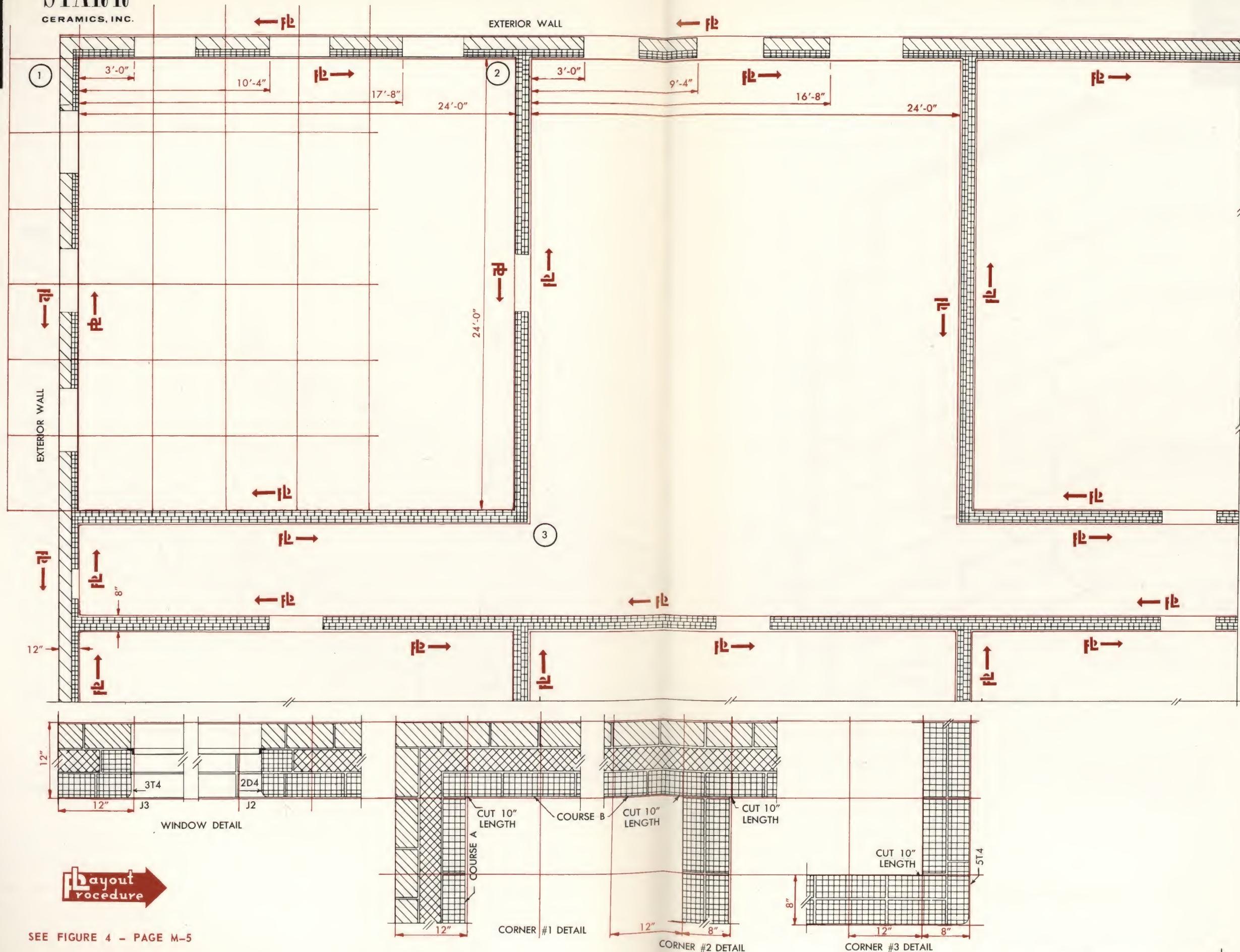
TITLE V — Military Housing Principle of MODULAR MEASURE

In the Housing Amendments of 1956, Section 405 of the Housing Amendments of 1955 was amended to require that plans and specifications prepared for military housing follow the principle of MODULAR MEASURE. The amendment requires that plans be drawn so that military housing can be built by conventional construction, site fabrication, or factory fabrication, whichever the successful bidder may elect. That

amendment reaffirmed the committee's intent that builders of prefabricated homes should have equal consideration in bidding on these military housing projects. The committee wishes to state again that the segments of the construction industry that use other than conventional methods, such as factory prefabrication, should be treated on a parity with other segments of the building industry.

STARK

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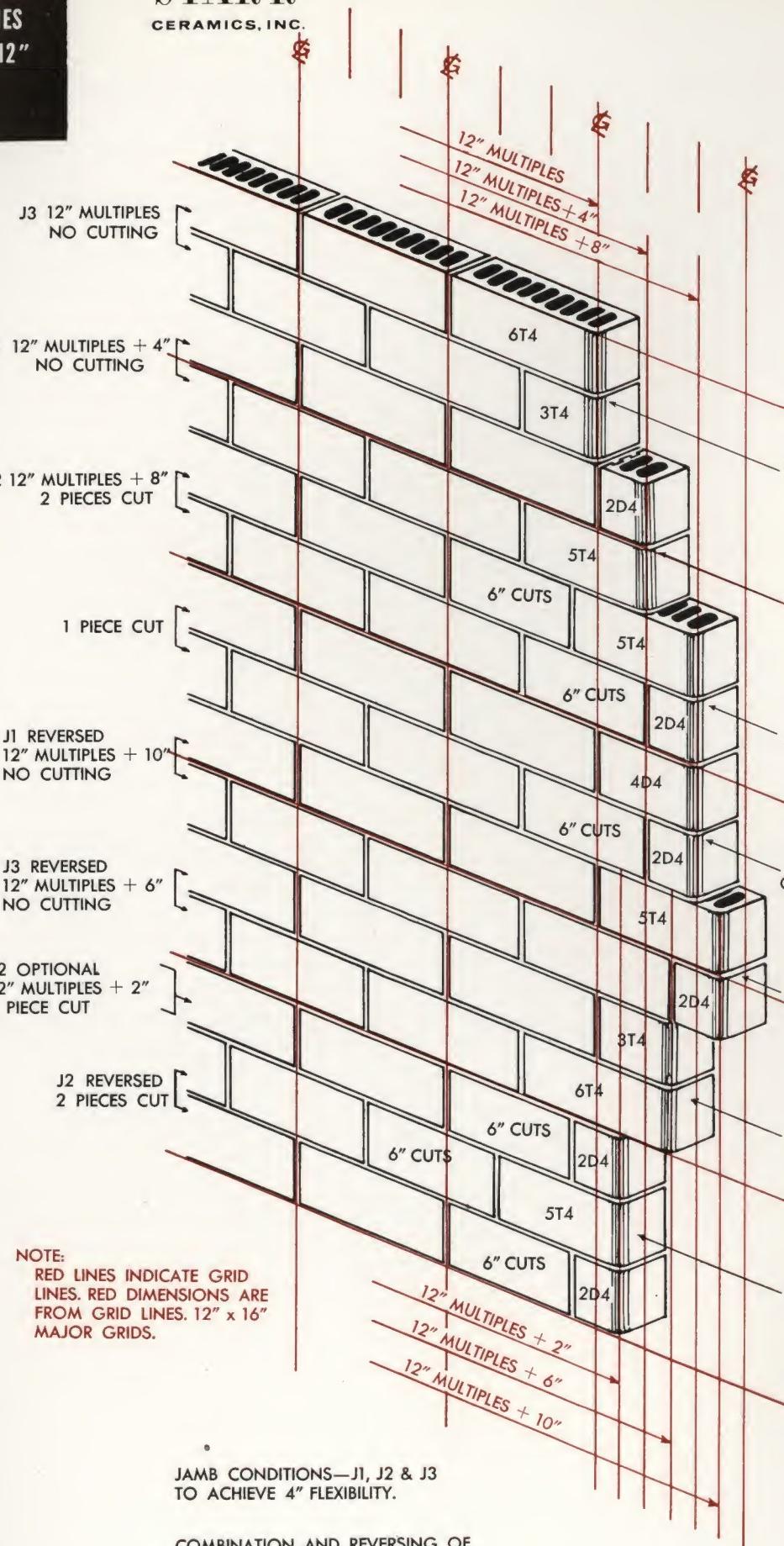
Layout
Procedure

KEY DETAILS
6T SERIES
 $5\frac{1}{3}'' \times 12''$

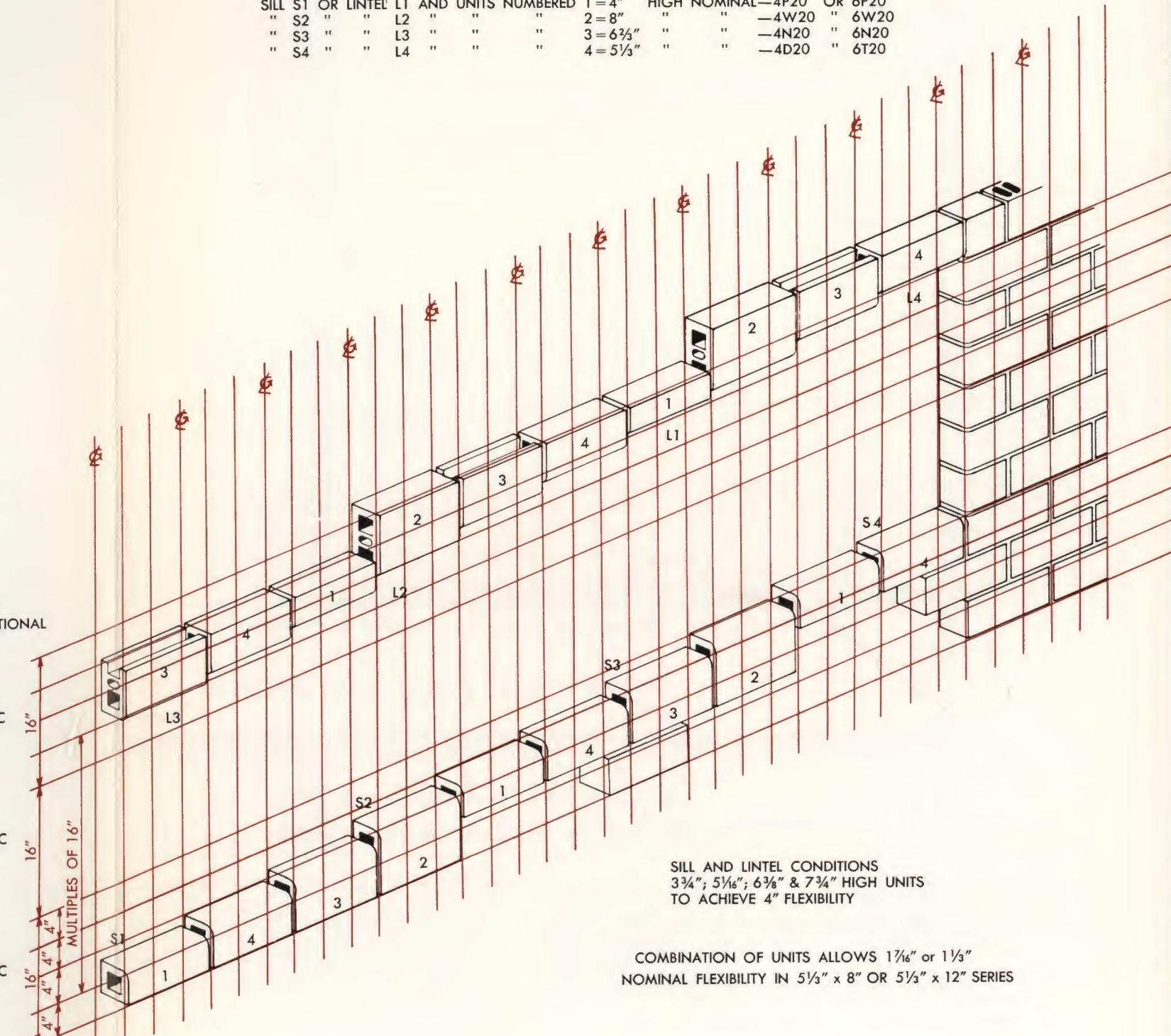
STARK

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M



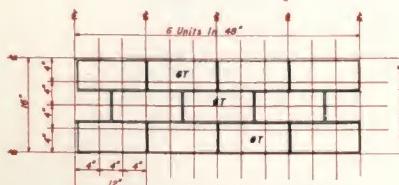
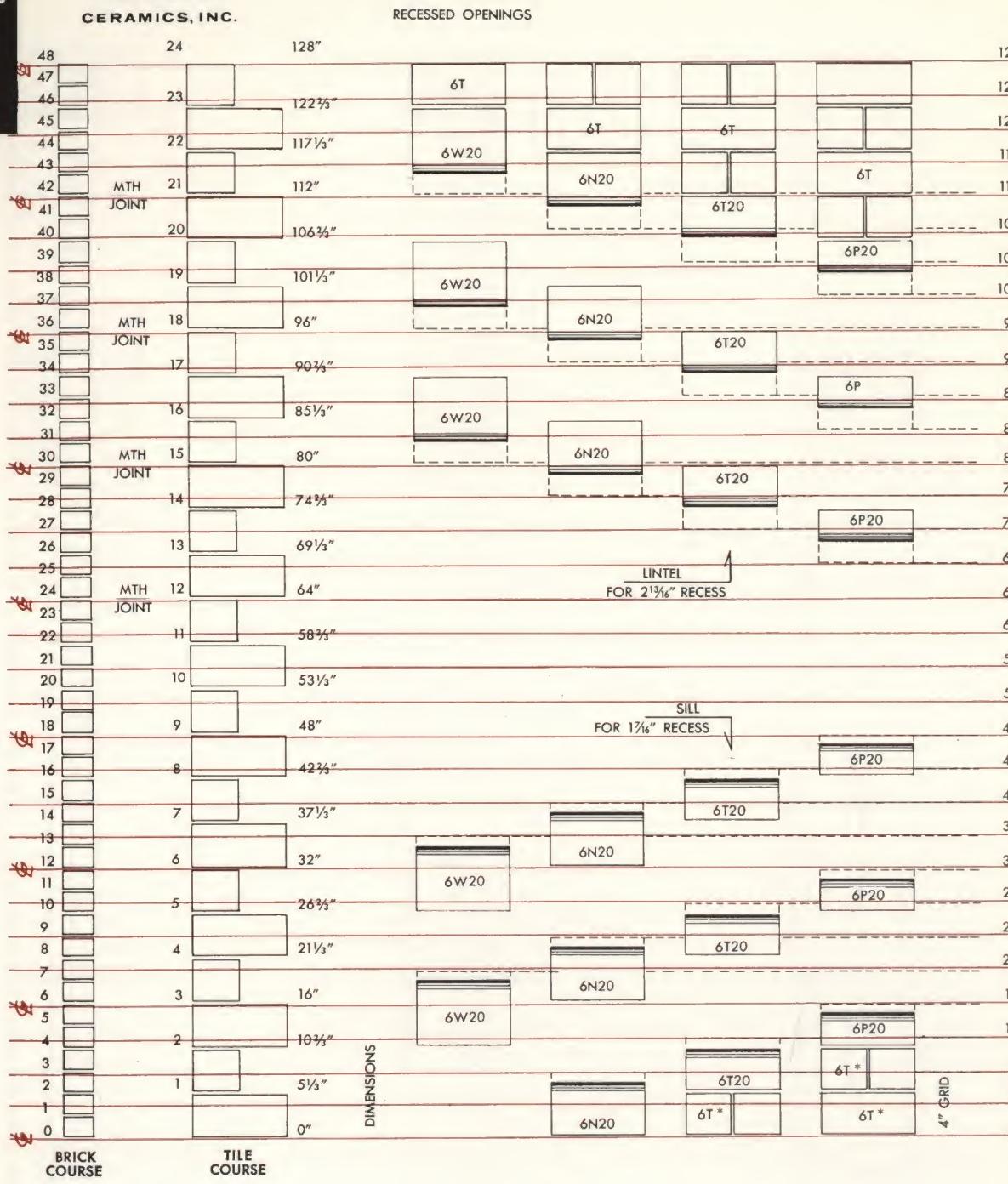
SILL S1 OR LINTEL L1	AND UNITS NUMBERED	1 = 4"	HIGH NOMINAL—4P20 OR 6P20
" S2 "	" L2 "	2 = 8"	" —4W20 " 6W20
" S3 "	" L3 "	3 = 6½"	" —4N20 " 6N20
" S4 "	" L4 "	4 = 5½"	" —4D20 " 6T20



MAJOR GRID LINES

GT SERIES
COURSING TABLES
VERTICAL AND
HORIZONTAL

STARK
CERAMICS, INC.

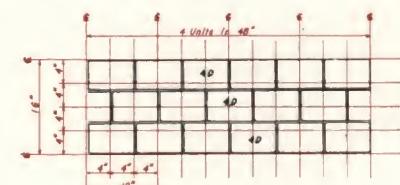


HORIZONTAL COURSING

To find number of 6T units needed for any horizontal dimension:
USE NOMINAL LENGTH OF TILE—12"

EXAMPLE:

$$47\frac{1}{2} \text{ feet} = 47\frac{1}{2} \text{ units}$$



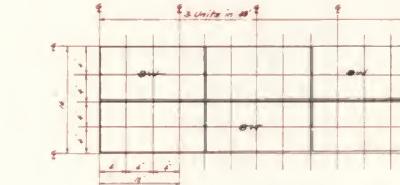
HORIZONTAL COURSING

To find number of 4D units needed for any horizontal dimension:
MULTIPLY FEET AND INCHES BY 1.5

EXAMPLE:

$$47 \text{ feet } 8 \text{ inches} = 47.66$$

$$\frac{1.5}{71.490 \text{ or } 71\frac{1}{2} \text{ units}}$$



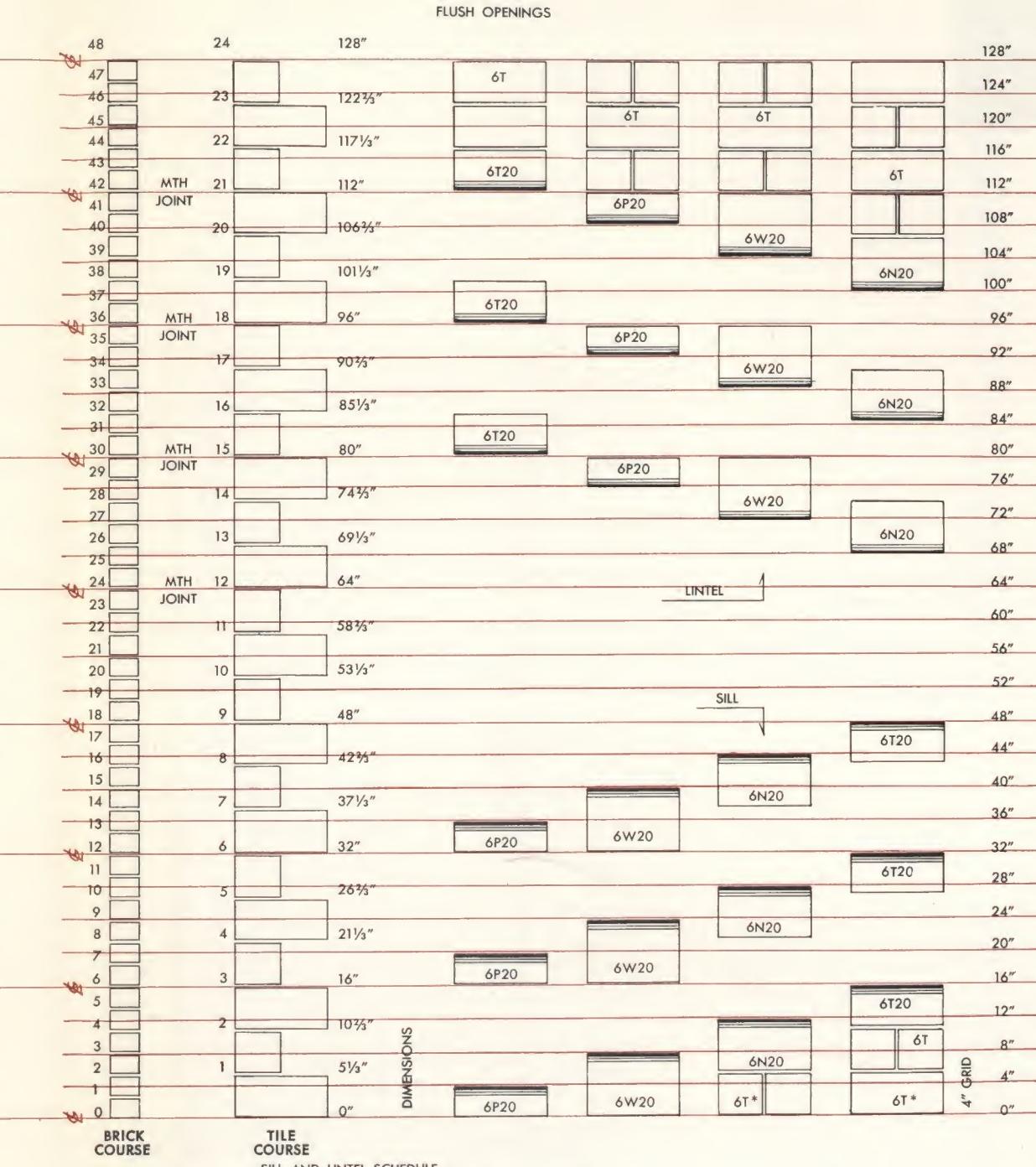
HORIZONTAL COURSING

To find number of 8W units needed for any horizontal dimension:
DIVIDE FEET AND INCHES BY 1.33

EXAMPLE:

$$35.75 \text{ or } 35\frac{3}{4} \text{ units}$$

$$47 \text{ ft. } 8 \text{ in.} = 1.33 \quad 47.66$$



DESCRIPTION	LINTEL		SILL		
	TYPE	FLUSH	RECESS	FLUSH	RECESS
ARCHITECTURAL PROJECTED—REMOVABLE			2 1/8"		1 1/8"
ARCHITECTURAL PROJECTED	GL			GL	1 1/8"
PIVOTED OR COMMERCIAL	GL	2 1/8"		GL	1 1/8"
DOUBLE HUNG	GL				1 1/8"
HEAVY DOUBLE HUNG	GL				1 1/8"
WOOD	GL			GL	
GLASS BLOCK	GL			GL	

FLUSH SILL OR LINTEL IS ON GRID LINE "GL".
SILL RECESS IS 1 1/8" BELOW GRID—LINTEL
RECESS IS 2 1/8" ABOVE GRID LINE.

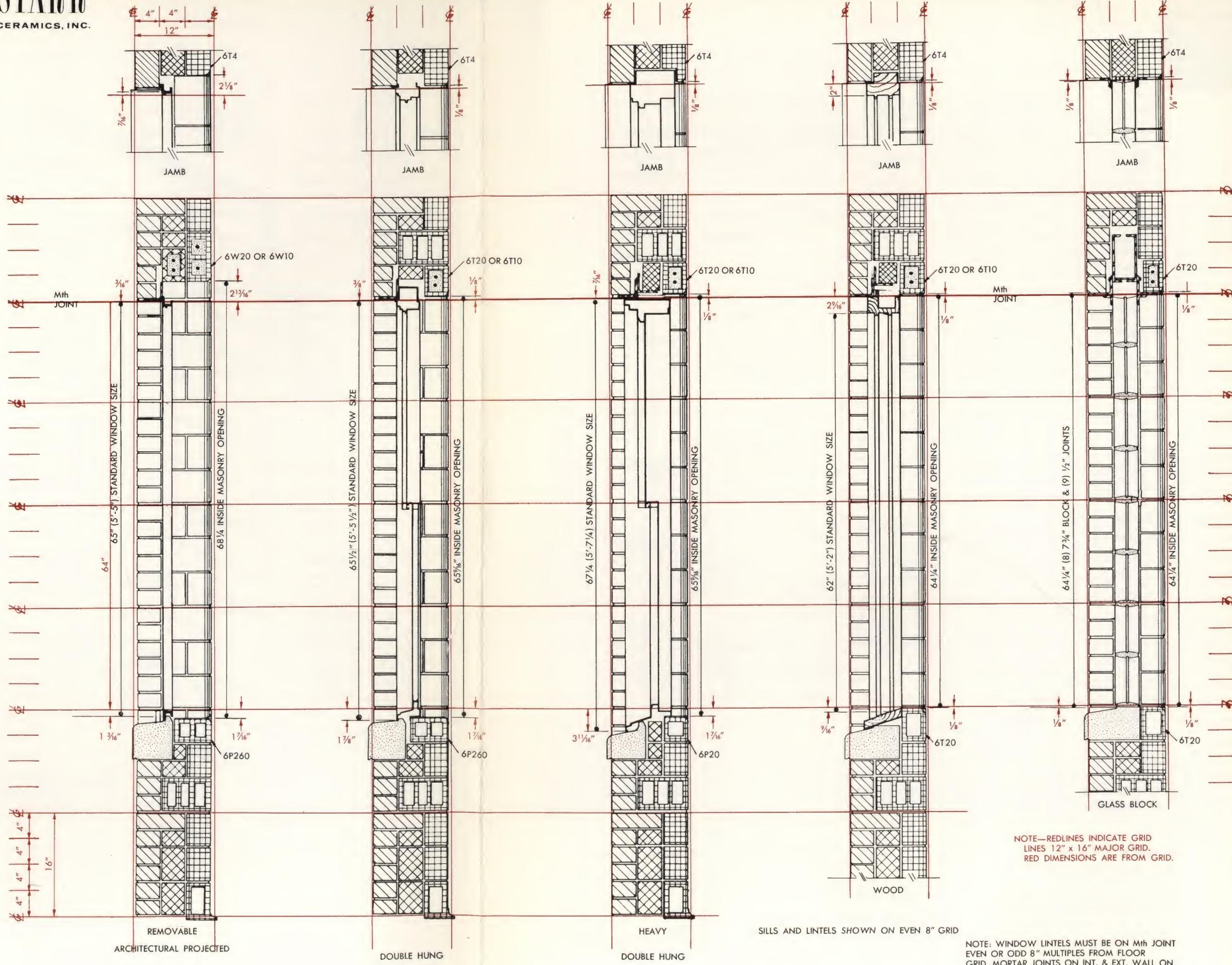
1 1/8" = 1/2 OF 4" GRID + 1/2 MORTAR JOINT
2 1/8" = 3/4 OF 4" GRID + 1/2 MORTAR JOINT

= MAJOR GRID LINE

* INDICATES CUT UNITS

5 1/2" x 12" SERIES SHOWN
TABLE CAN BE USED FOR ALL 5 1/2" HIGH UNITS.

PROPER UNITS FOR FLUSH AND RECESSED OPENINGS AND VERTICAL COURSING TABLE



CERAMICS, INC.

SILLS AND LINTELS—EVEN 8"
MULTIPLE FROM FLOOR GRID

MASONRY OP'G FOR 3'-4 $\frac{1}{8}$ " x 5'-5"

LEVEL SHOWING ALL JAMB
CONDITIONS SILL S1 AND LINTEL L4
BASE COURSE 'A' FULL STARTER

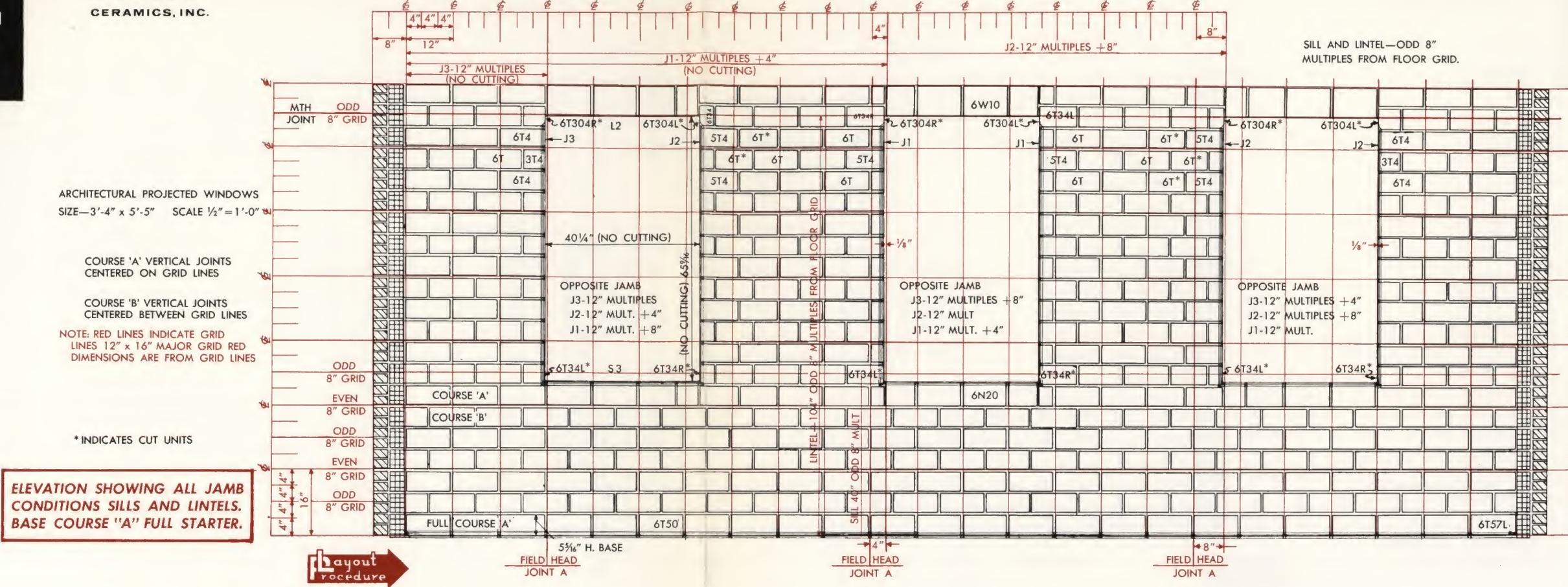
NOTE: RED LINES INDICATE GRID LINES
12" x 16" MAJOR GRID RED
DIMENSIONS ARE FROM GRID LINES.

SECTION A-A

**ELEVATION SHOWING ALL JAMB
CONDITIONS SILL S1 AND LINTEL L4.
BASE COURSE "A" FULL STARTER.**

**FOR DETAILS OF JAMB,
SILL & LINTEL, SEE M-12**

MASONRY OPENINGS FOR 3'-4 $\frac{7}{8}$ " x 5'-5" STEEL SASH



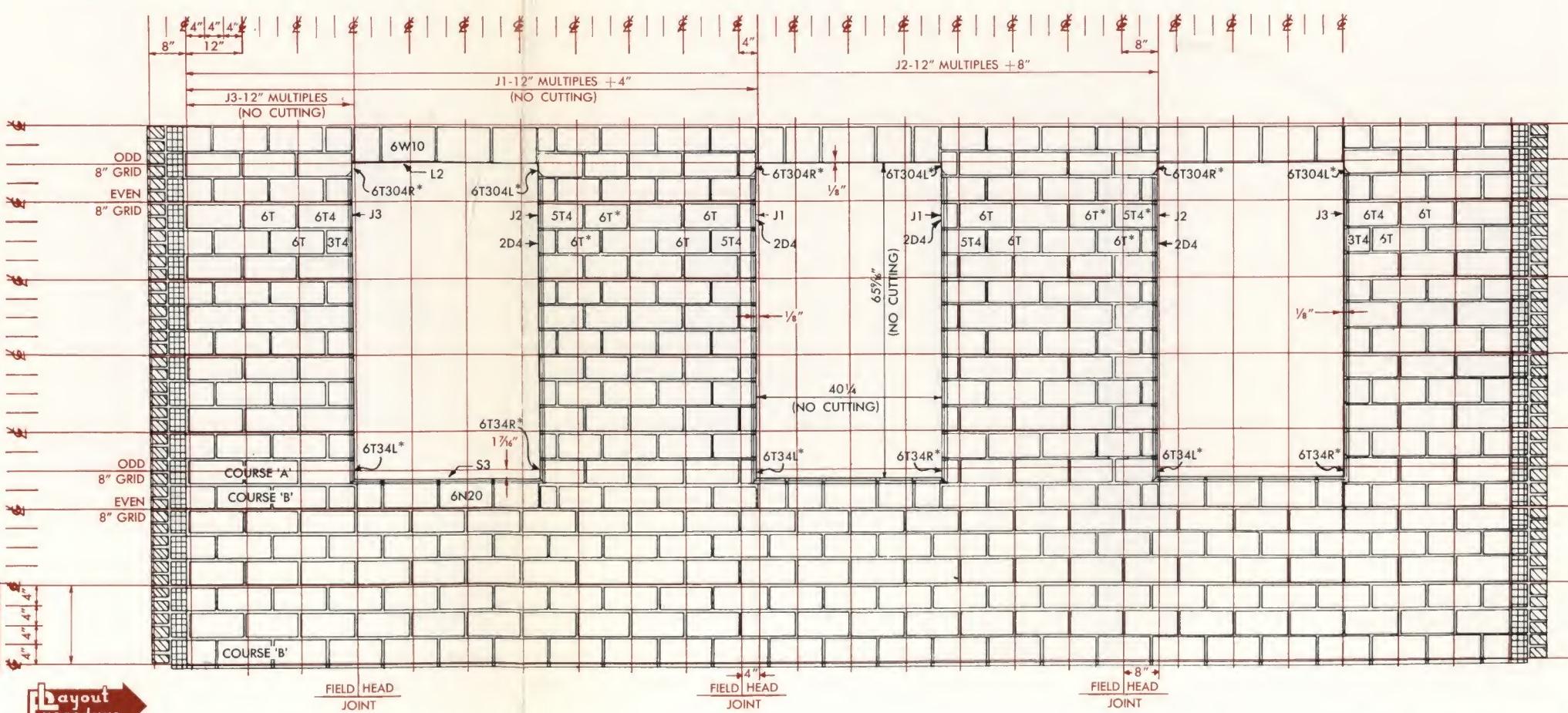
FOR DETAILS OF JAMB,
SILL & LINTEL, SEE M-12

SILL AND LINTEL—ODD 8" MULTIPLES FROM FLOOR GRID

MASONRY OPENINGS
FOR 3'4 1/8" x 5'-5" STEEL SASH

⊖ = MAJOR GRID LINE

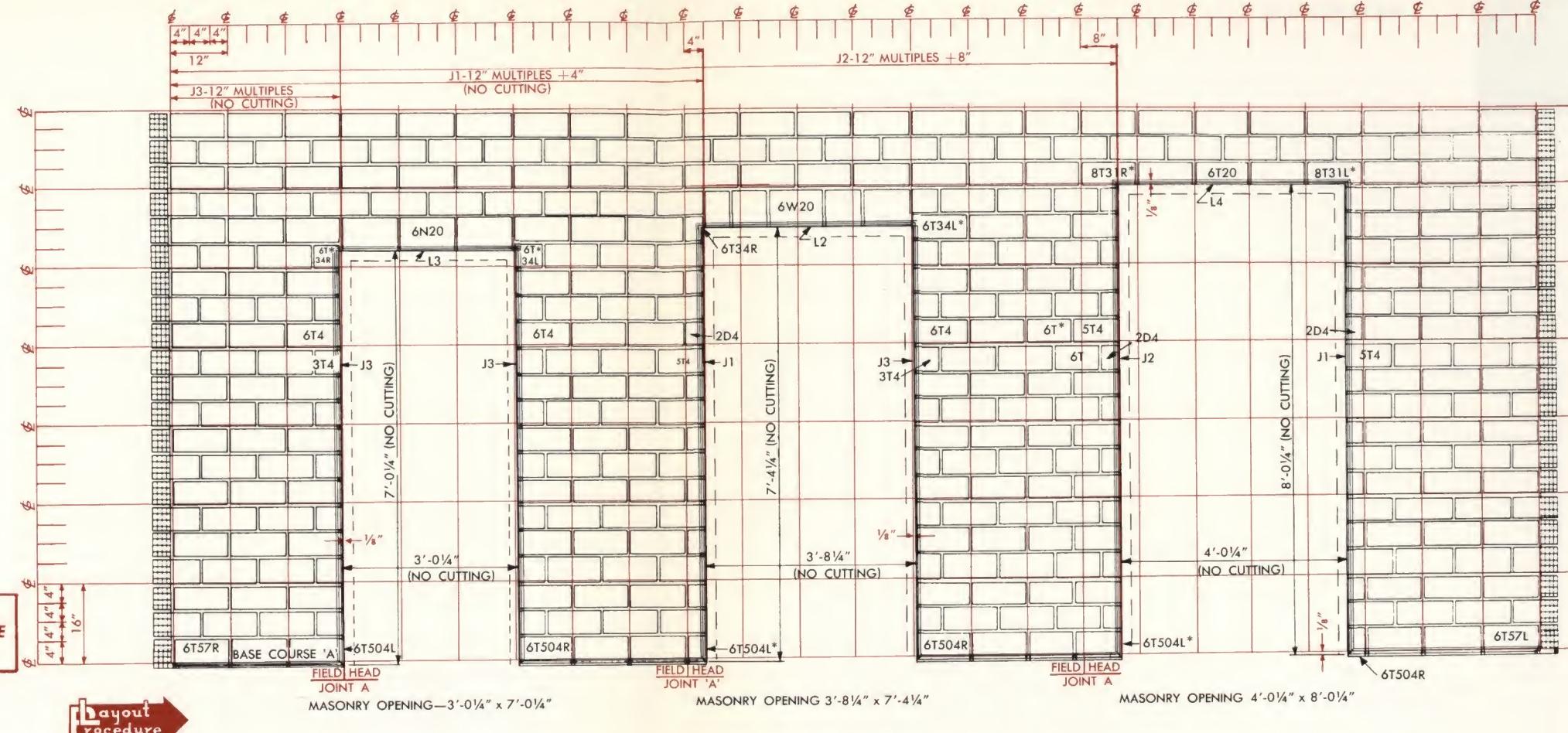
ELEVATION SHOWING ALL JAMB CONDITIONS, SILLS AND LINTELS. BASE COURSE "B" HALF STARTER.



NOTE—RED LINES INDICATE GRID LINES
12" x 16 MAJOR GRID RED
DIMENSIONS ARE FROM GRID LINES

LINTEL SCHEDULE			
6'-8"	OPENING	LINTEL	6T20 L4-UNIT 5 $\frac{1}{4}$ " HIGH
7'-0"	"	"	6N20 L3 " 6 $\frac{3}{4}$ " "
7'-4"	"	"	6W20 L2 " 7 $\frac{3}{4}$ " "
8'-0"	"	"	6T20 L4 " 5 $\frac{1}{4}$ " "
10'-0"	"	"	6W20 L2 " 7 $\frac{3}{4}$ " "

ELEVATION SHOWING THREE
STANDARD DOOR OPENINGS. BASE
COURSE "A" FULL STARTER.



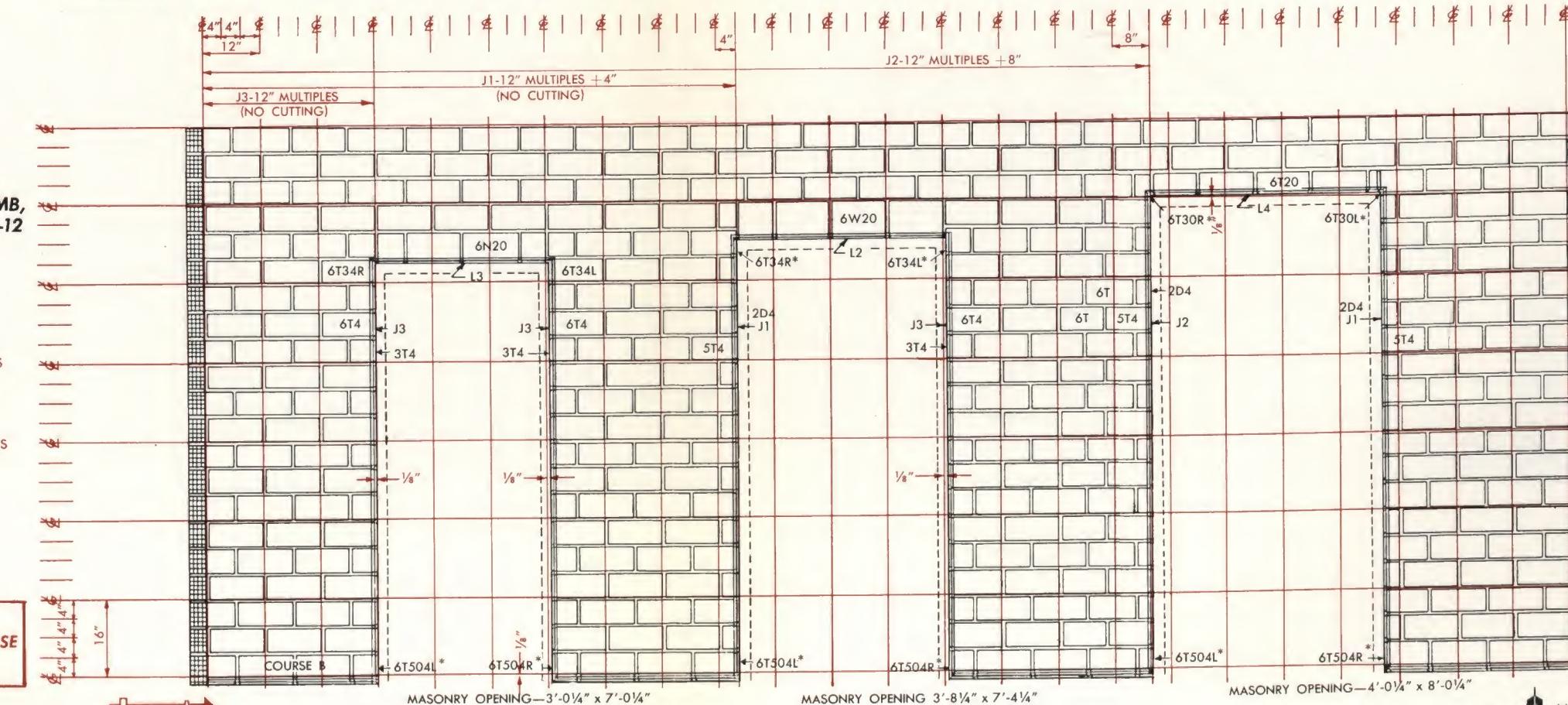
Layout
Procedure

FOR DETAILS OF JAMB,
SILL & LINTEL, SEE M-12

* INDICATES CUT UNITS

¤ = MAJOR GRID LINES

ELEVATION SHOWING THREE
STANDARD DOOR OPENINGS. BASE
COURSE "B" HALF STARTER.

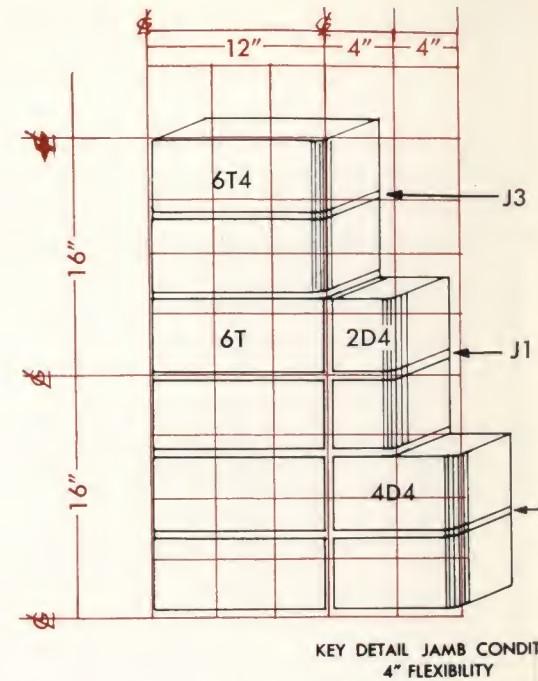


Layout
Procedure

WALL ELEVATION
AND WINDOW OPENINGS
6T STACK BOND
EVEN 8"
FROM FLOOR

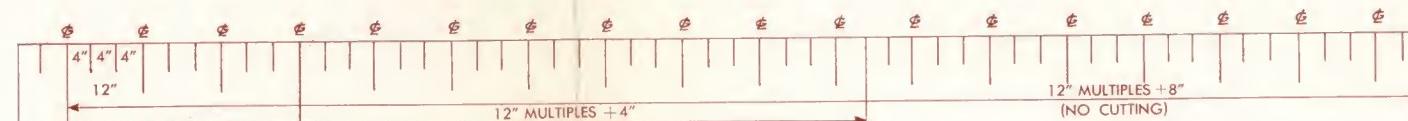
STARK
CERAMICS, INC.

M



KEY DETAIL JAMB CONDITIONS
4" FLEXIBILITY

SILLS & LINTEL—EVEN 8"
MULTIPLE FROM FLOOR GRID



MAJOR GRID LINE

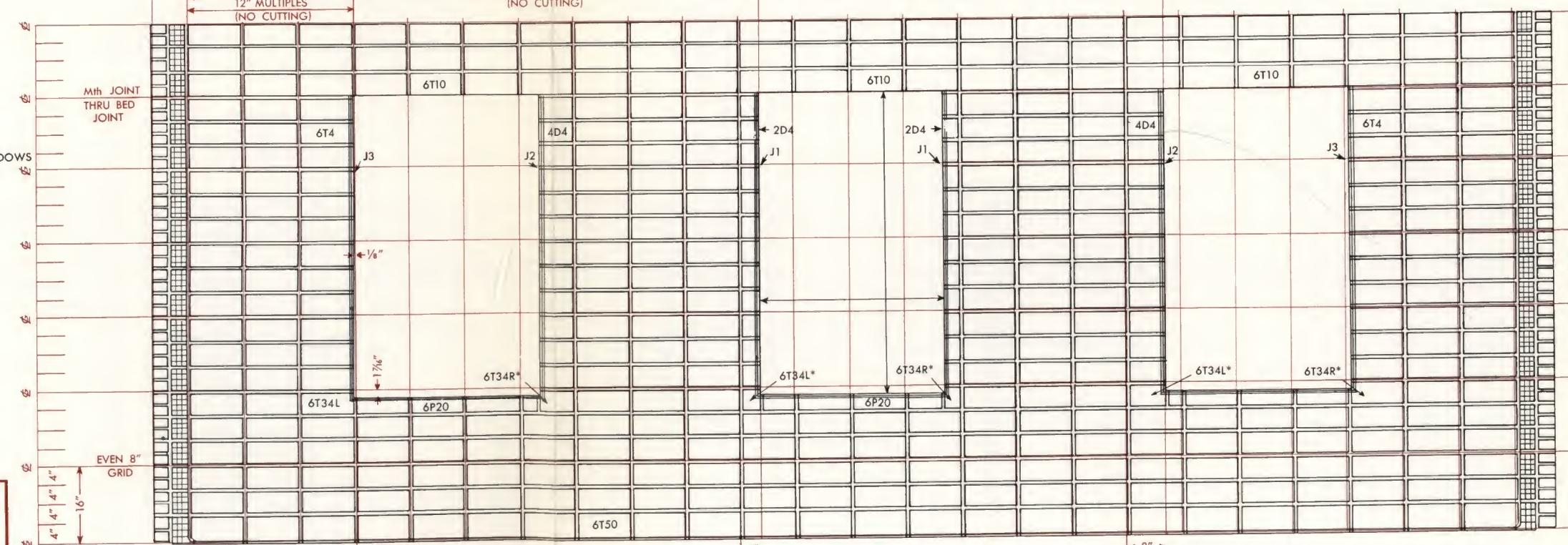
MASONRY OPENING FOR
3'-4 1/8" X 5'-5" STEEL WINDOWS

NOTE: RED LINES INDICATE
GRID LINES

12" X 16" MAJOR GRID
RED DIMENSIONS ARE
FROM GRID LINES

* INDICATES CUT UNITS

ELEVATION SHOWING ALL JAMB
CONDITIONS. 6T SERIES—STACK
BOND. EVEN 8" FROM FLOOR.



WALL ELEVATION
AND WINDOW OPENINGS
6T STACK BOND
ODD 8"
FROM FLOOR

STARK
CERAMICS, INC.

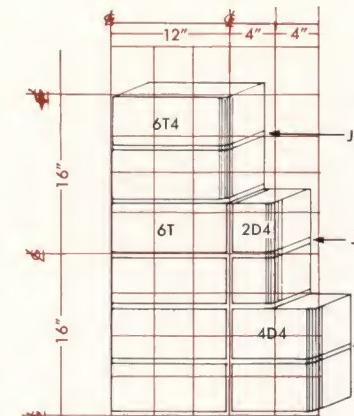
NOTE: RED LINES INDICATE GRID LINES.
12" x 16" MAJOR GRID ON ELEVATION.
RED DIMENSIONS ARE FROM GRID LINES.

ELEVATION SHOWING ALL JAMB CONDITIONS
6T SERIES—STACK BOND

MAJOR GRID LINE

ELEVATION SHOWING ALL JAMB CONDITIONS.
6T SERIES—STACK BOND. ODD 8" FROM FLOOR.

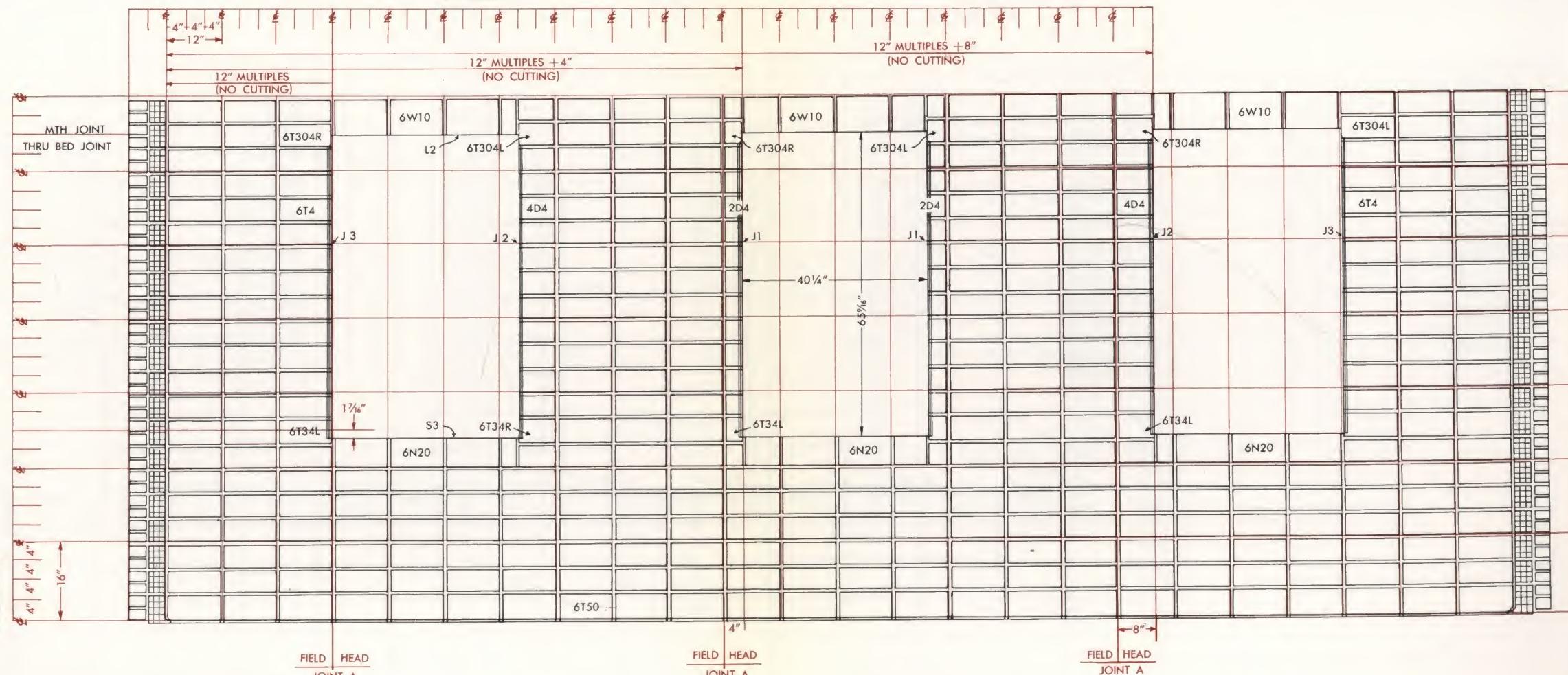
* INDICATES CUT UNITS



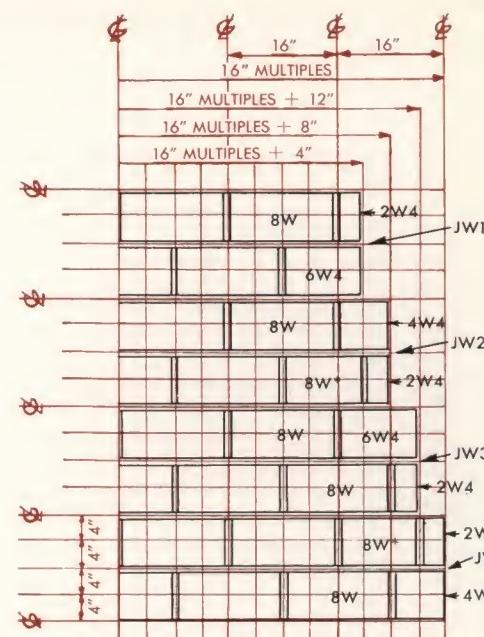
MASONRY OPENINGS FOR
3'-4 7/8" X 5'-5" STEEL WINDOW

SILL AND LINTEL—ODD 8"
MULTIPLES FROM FLOOR GRID

KEY DETAIL JAMB CONDITIONS
4" FLEXIBILITY



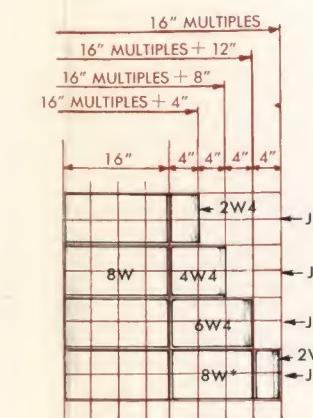
layout
procedure



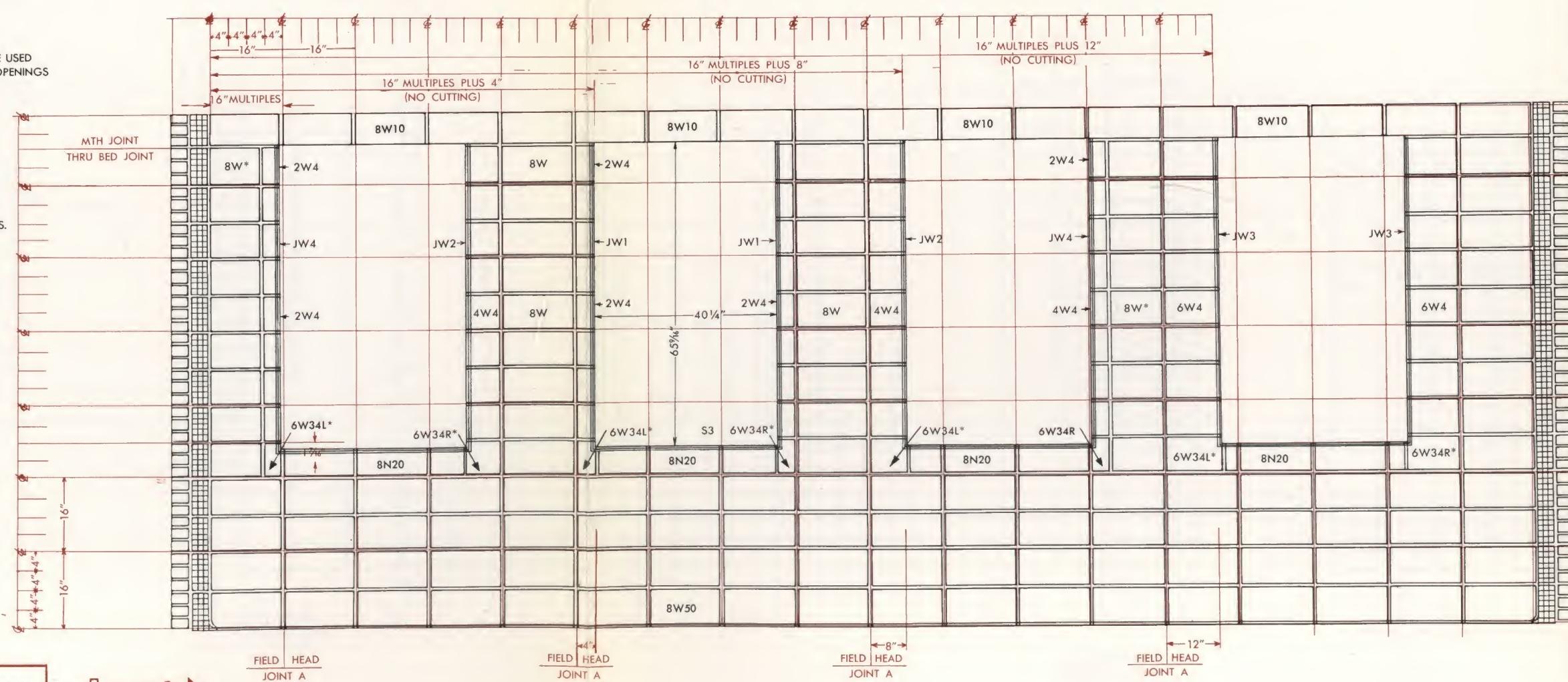
SILL AND LINTEL SHOWN ON ODD 8"
MULTIPLE FROM FLOOR GRID
(IN 8W SERIES THE SAME CONDITIONS OCCUR
ON EVEN 8" MULTIPLES FROM FLOOR GRID)

MASONRY OPENINGS FOR
3'-4 1/8" X 5'-5" STEEL WINDOW
4 JAMB CONDITIONS SHOWN WILL BE USED
FOR ALL OTHER TYPES OF WINDOW OPENINGS

KEY DETAIL
JAMB CONDITIONS
4" FLEXIBILITY
COMMON BOND

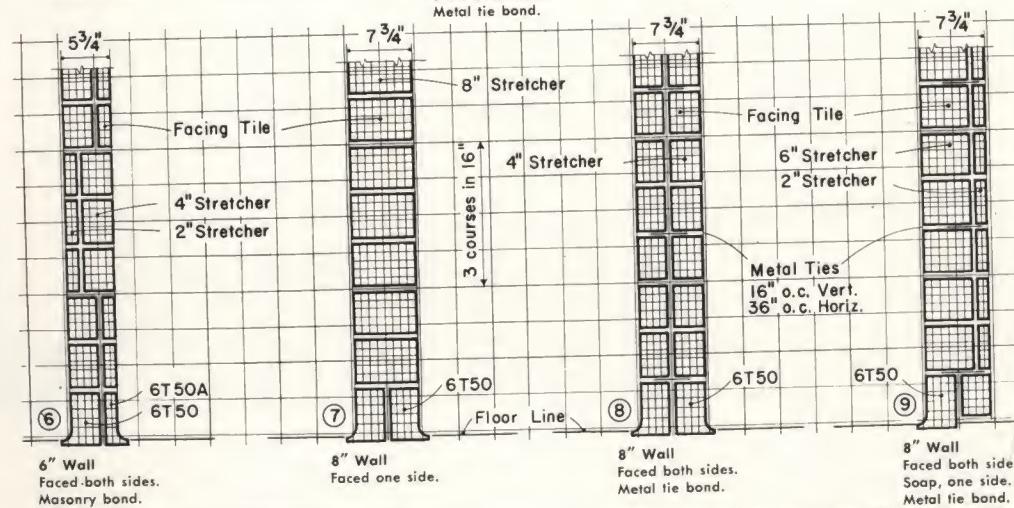
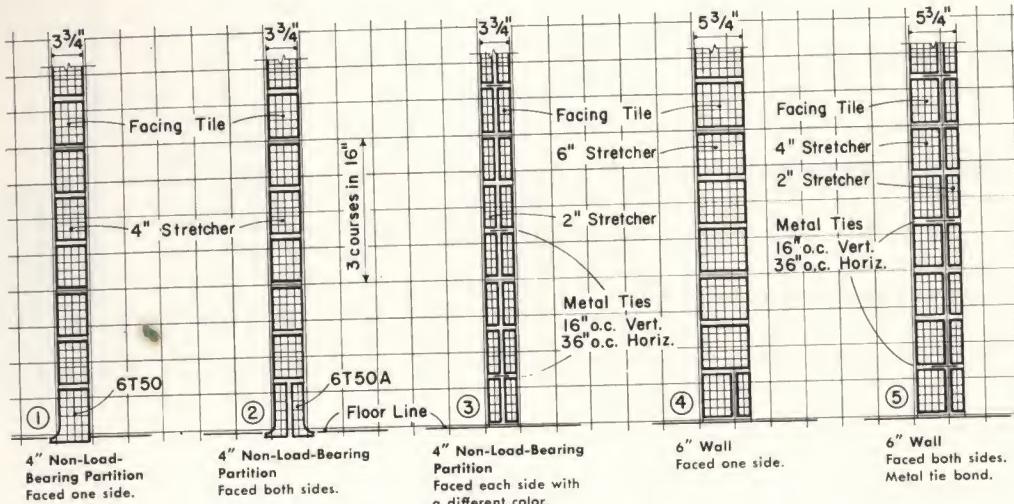


KEY DETAILS
4 JAMB CONDITIONS
4" FLEXIBILITY
STACK BOND



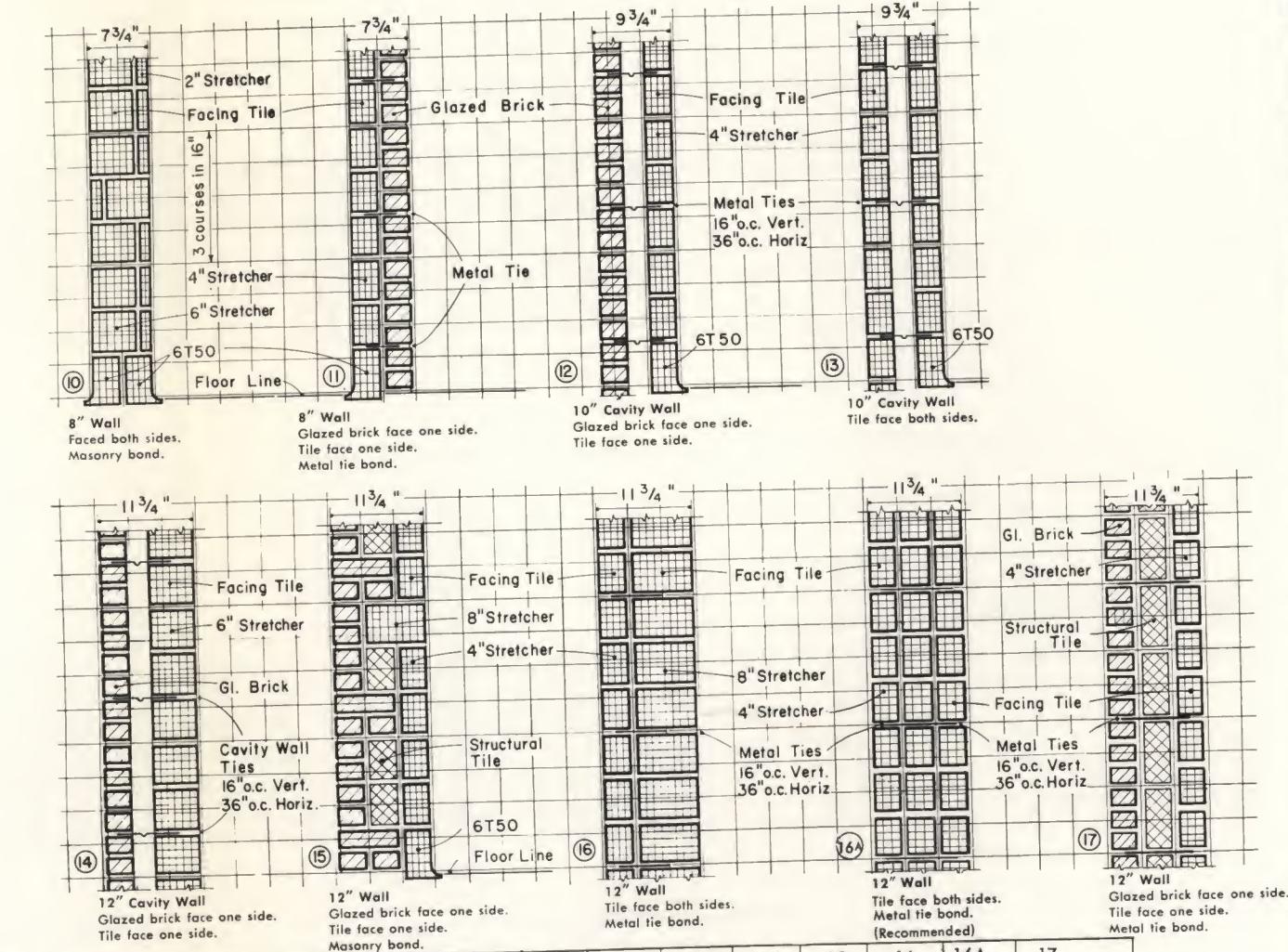
ELEVATION SHOWING ALL JAMB
CONDITIONS (8" x 16" NOMINAL)
8W SERIES—STACK BOND.

Layout
Procedure



WALL NUMBER	1	2	3	4	5	6	7	8	9
Allowable Load (lbs./linear ft.)	Type M Mortar (85 psi) S (75 psi) N (70 psi)	—	—	—	5,870 5,180 4,830	5,870 5,180 4,830	5,870 5,180 4,830	7,900 6,980 6,510	7,900 6,980 6,510
Material Quantity (per 100 sq. ft.)	Mortar (cu. ft.) 25% waste added Units 6T (F.T.) 2% " " (F.T.) 2% " " Metal Ties 2% " "	2.19 230 — —	2.19 230 460 25.5	3.36 230 — —	3.36 230 230 —	3.36 230 230 —	4.53 460 — 25.5	4.53 460 230 —	4.53 230 230 25.5
"U" Value (BTU/sq. ft./hr./°F.)	Unplastered Partition	.40	.40	.39	.35	.34	.34	.31	.30
Lateral Support Spacing Required (ft.)	Non-Load-Bearing Load-Bearing	12	12	12	18 9	18 9	24 12	24 12	24 12
Wall Weight (Av.) (lbs./sq. ft.)	Unplastered	30	30	33	41	47	47	50	58
Sound Resistance (db.)	Unplastered	45	45	46	47	48	48	49	50

¹ If collar joint is filled, add 2.6 cu. ft. per 100 sq. ft. of wall.



WALL NUMBER	10	11	12	13	14	15	16	16A	17
Allowable Load (lbs./linear ft.)	Type M Mortar (85 psi) S (75 psi) N (70 psi)	7,900 6,980 6,510	7,900 6,980 6,510	6,300 ³ 5,400 ³ 4,950 ³	6,300 ³ 5,400 ³ 4,950 ³	7,970 ³ 6,840 ³ 6,270 ³	12,000 10,580 9,860	12,000 10,580 9,860	12,000 10,580 9,860
Material Quantity (per 100 sq. ft.)	Mortar (cu. ft.) 25% waste added Units 6T (F.T.) 2% " " (S.T.) 2% " " (Brick) 5% " " Metal Ties 2% " "	4.53 ¹ 230 ⁴	9.57 230	6.97 460	4.38 230	8.14 192/38	14.33 230 ²	9.32 230 ²	11.61 4.60
"U" Value (BTU/sq. ft./hr./°F.)	Unplastered Partition Exterior Wall 2" Insulation	.30	.41	.25	.23	.31	.30	.25	.31
Lateral Support Spacing Required (ft.)	Non-Load-Bearing Load-Bearing	24 12	24 12	24 12	30 15	36 18	36 18	36 18	36 18
Wall Weight (Av.) (lbs./sq. ft.)	Unplastered	58	67	67	79	90	80	84	89
Sound Resistance (db.)	Unplastered	50	52	54	52	58	57	57	57

¹ If collar joint is filled, add 2.6 cu. ft. per 100 sq. ft. of wall.

² 230 each of 2" and 6" stretchers.

³ Eccentrically loaded. For concentric loading increase allowable load 25%.

⁴ 230 each of 4" and 8" stretchers.

FLOOR 'E' AND 'F' ODD 8" GRID

EXTERIOR WALL SECTION WITH STEEL JOISTS

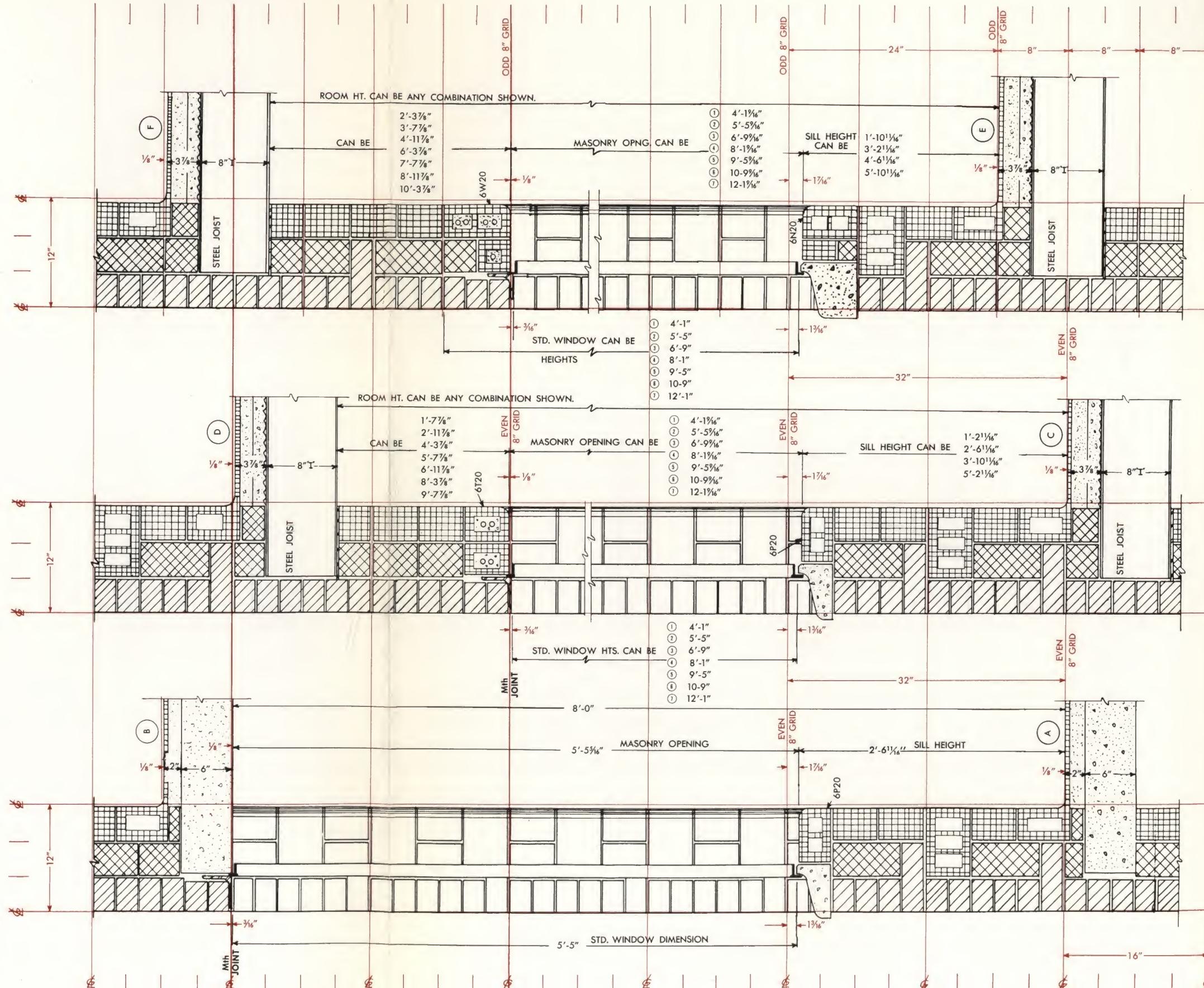
FLOOR 'C' AND 'D' EVEN 8" GRID

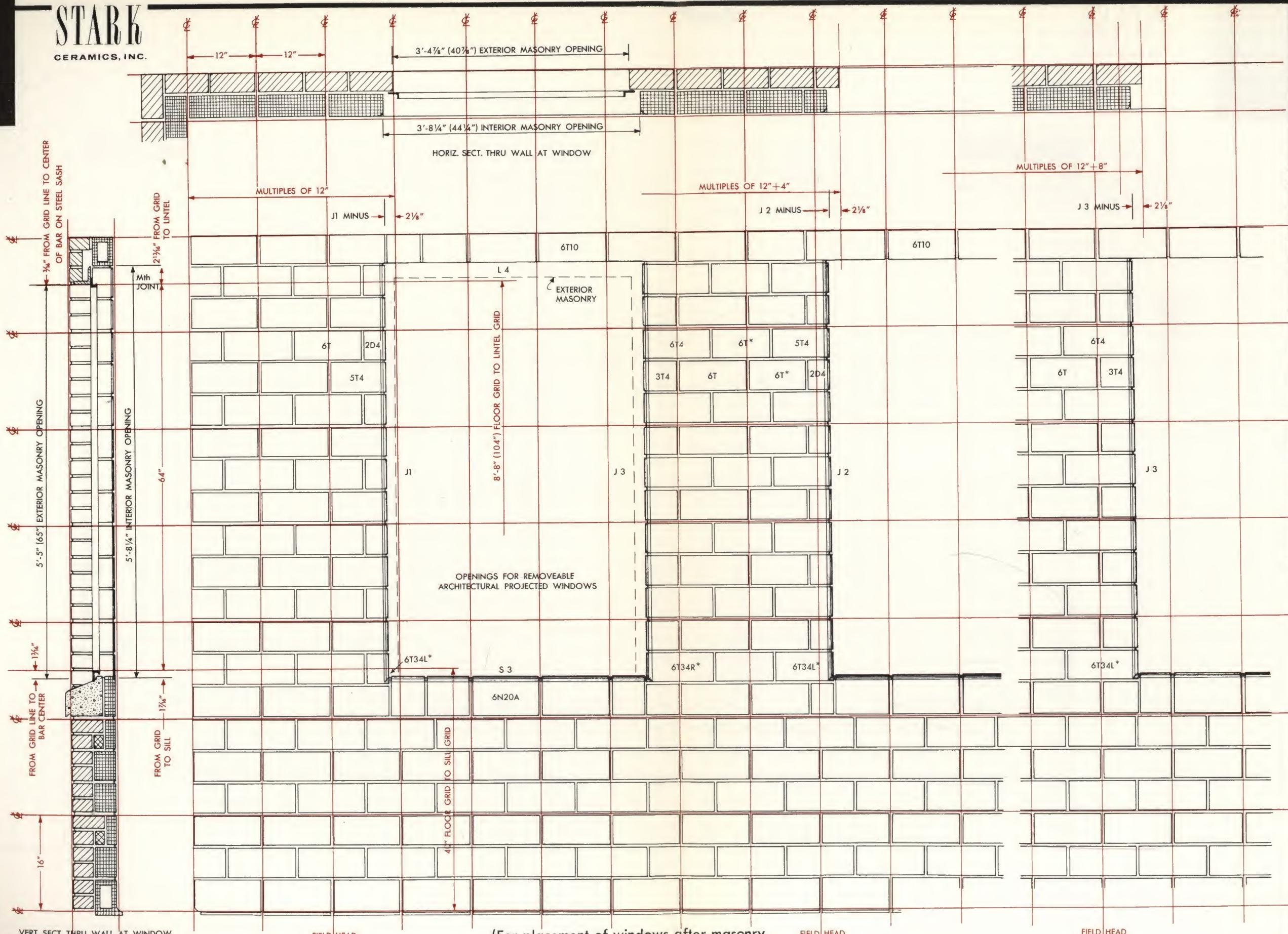
NOTE:
REDLINE INDICATE GRID LINES
12" x 16" MAJOR GRID.
RED DIMENSIONS ARE FROM
GRID.

WALL SECTION WITH CONCRETE BEAMS & FLOORS

8'-0" HIGH FLOOR TO CEILING
FLOOR 'A' EVEN 8" GRID
FLOR 'B' ODD 8" GRID

**COMBINATION DETAIL—
PROPER SILL AND LINTEL UNITS ARE
SHOWN TO ACCOMMODATE ANY
COMBINATION OF SILL, LINTEL AND
MASONRY HEIGHTS SHOWN.**



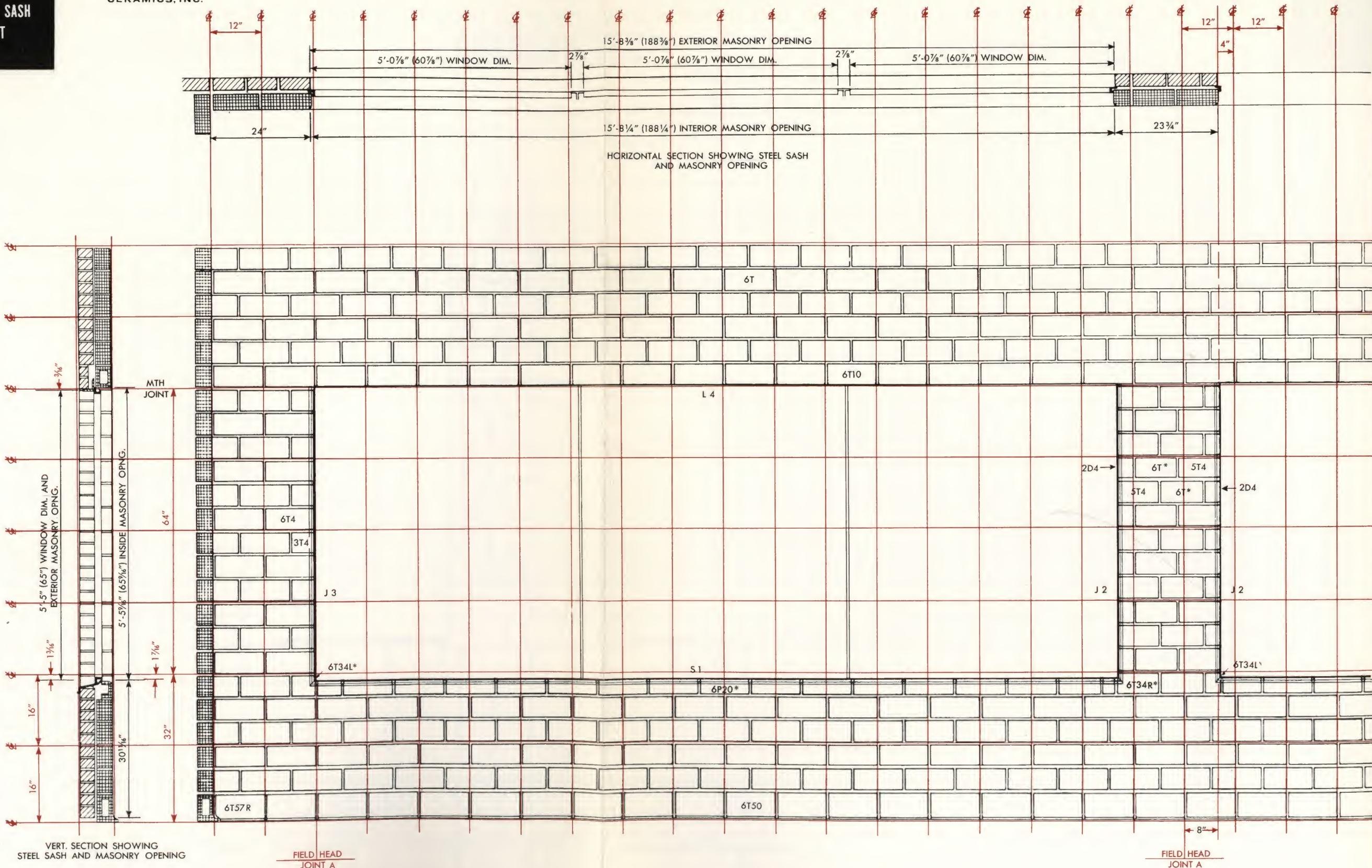


ELEVATION SHOWING ALL JAMBS
J1-J2 & J3 SILL AND LINTEL ODD
8" MULTIPLE FROM FLOOR.
RECESSED JAMB, SILL & LINTEL

Layout Procedure

(For placement of windows after masonry
is installed. Replacing windows
without affecting masonry.)

NOTE:
RED LINES INDICATE GRID LINES.
NOTE 12" x 16" MAJOR GRID (\$).
RED DIMENSIONS ARE FROM GRID.
* INDICATES CUT UNITS



ELEVATION SHOWING JAMB, SILL
AND LINTEL WITH MULTIPLE STEEL
WINDOW OPENING SILL AND LINTEL
EVEN 8" MULTIPLE FROM FLOOR.

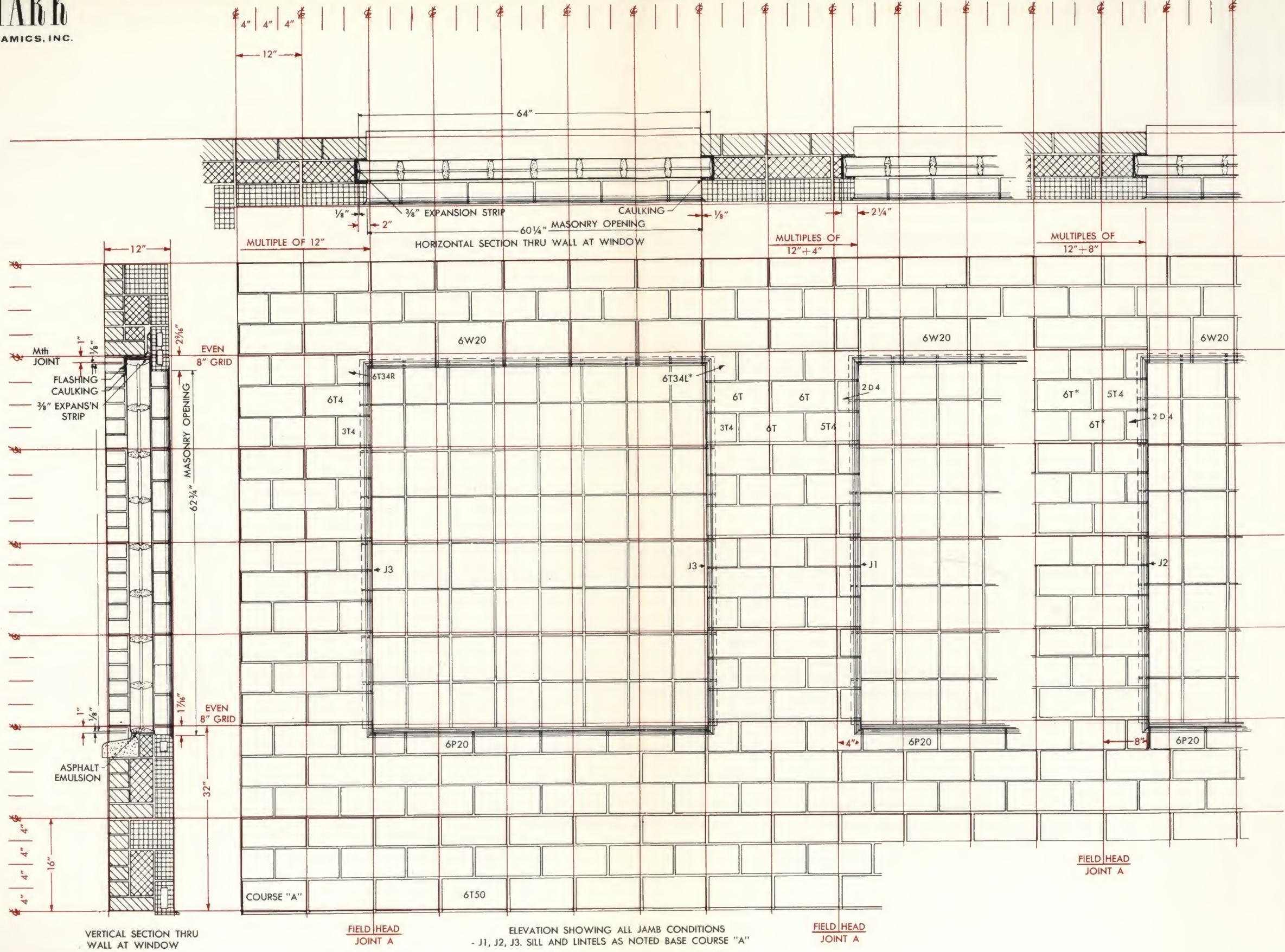


NOTE: VARIATION IN WIDTH OF OPENINGS MAY BE
OBTAINED BY REDUCING WIDTH OF MULLIONS FROM $3\frac{1}{8}$ " to $2\frac{1}{8}$ "
MULLION ABOVE SHOWN $2\frac{1}{8}$ " WIDE
* INDICATES CUT UNITS

NOTE:
RED LINES INDICATE GRID LINES.
NOTICE 12" x 16" MAJOR GRID DIMENSIONS FROM
GRIDLINES ALSO SHOWN IN RED.

WINDOW
OPENINGS
GLASS BLOCK
6T
COMMON BOND

STARK CERAMICS, INC.



**ELEVATION SHOWING
JAMB, SILL & LINTEL
WITH GLASS BLOCK**



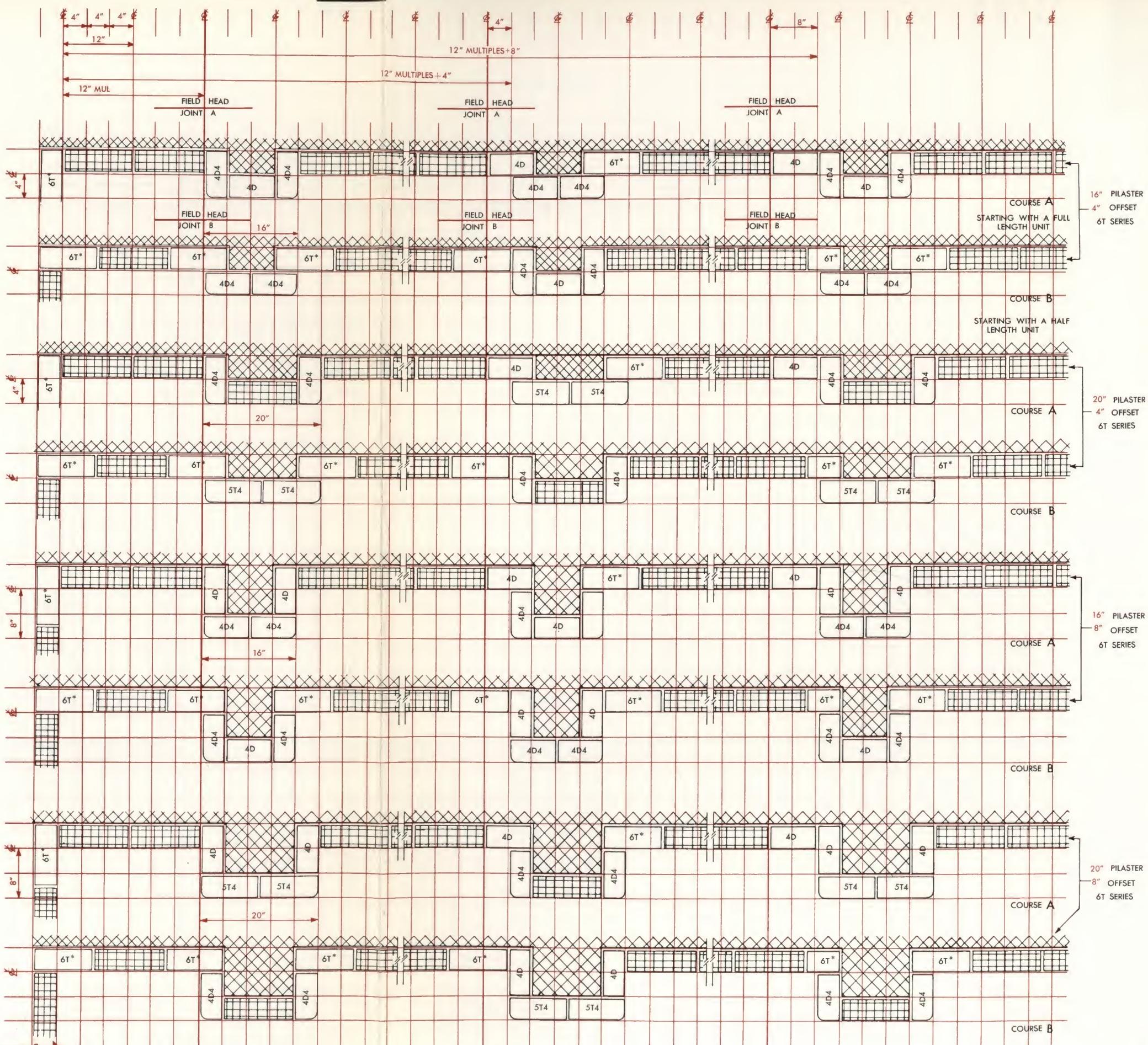
NOTE
RED LINES INDICATE GRID
LINES. 12" x 16" MAJOR GR.
RED DIMENSIONS ARE FROM
GRID.
*** INDICATES CUT UNITS**

NOTE
SILL AND LINTEL EVEN
8" MULTIPLES FROM FLOOR
GRID. COURSE "A" VERTICAL
JOINTS CENTERED ON GRID LINES.

PILASTER
16" x 20"
4" & 8" OFFSET
6T
COMMON BOND

STARK
CERAMICS, INC.

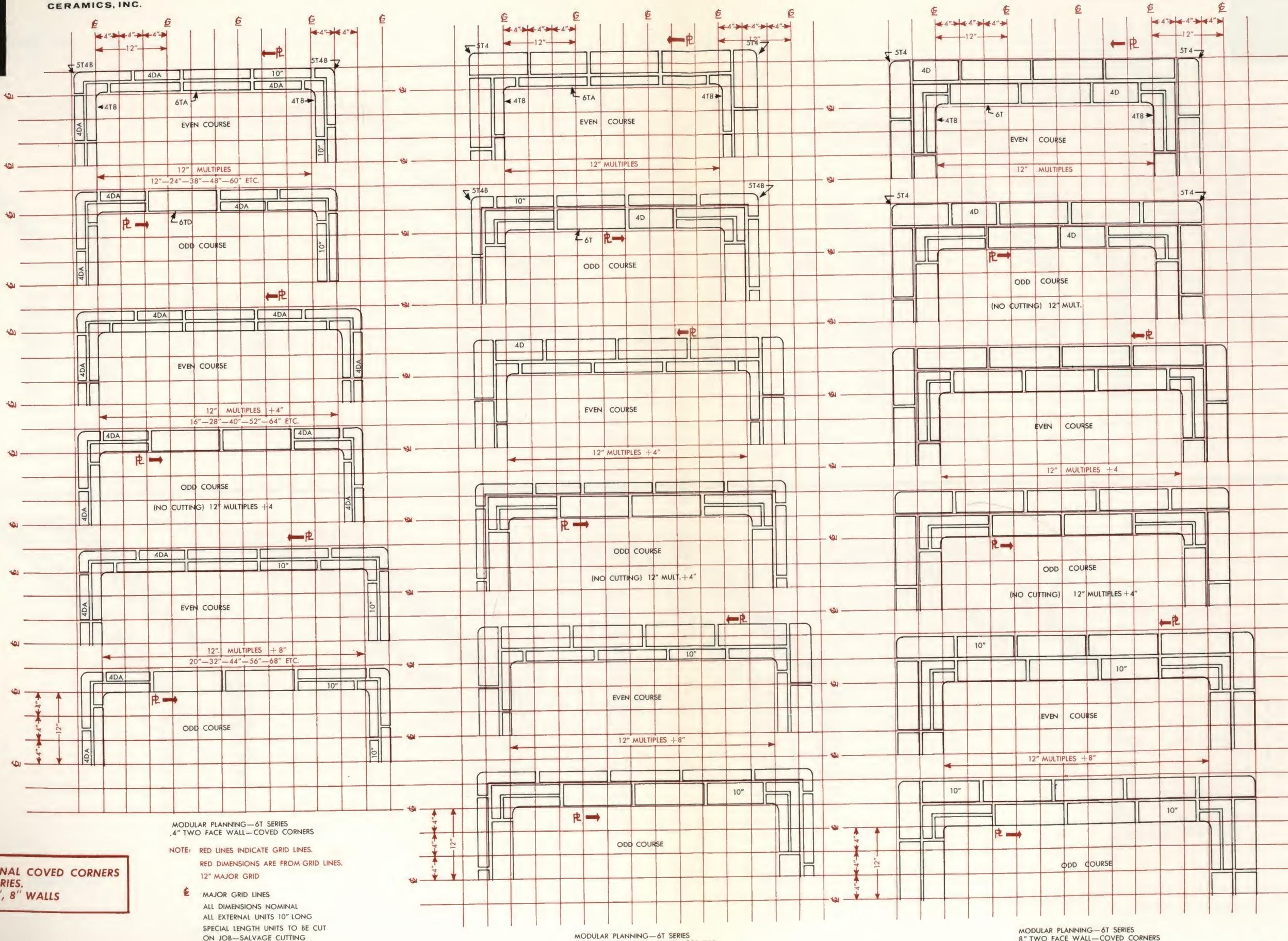
M

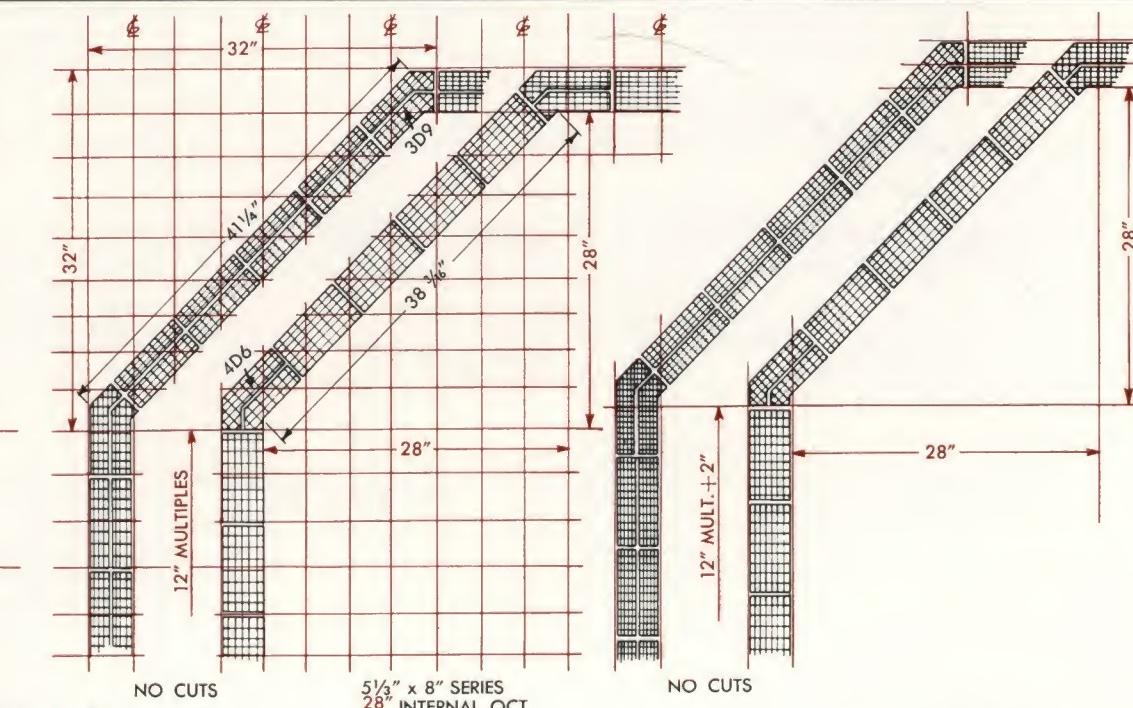
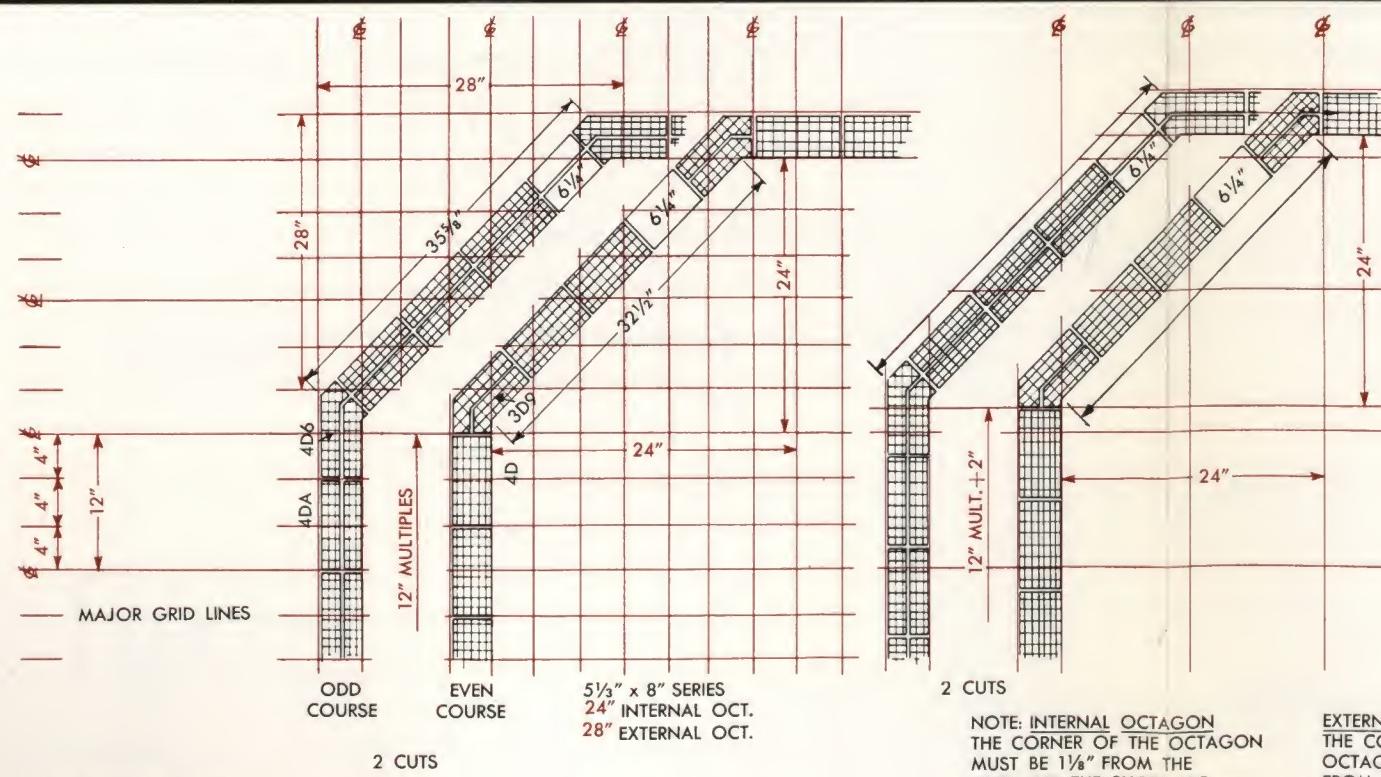
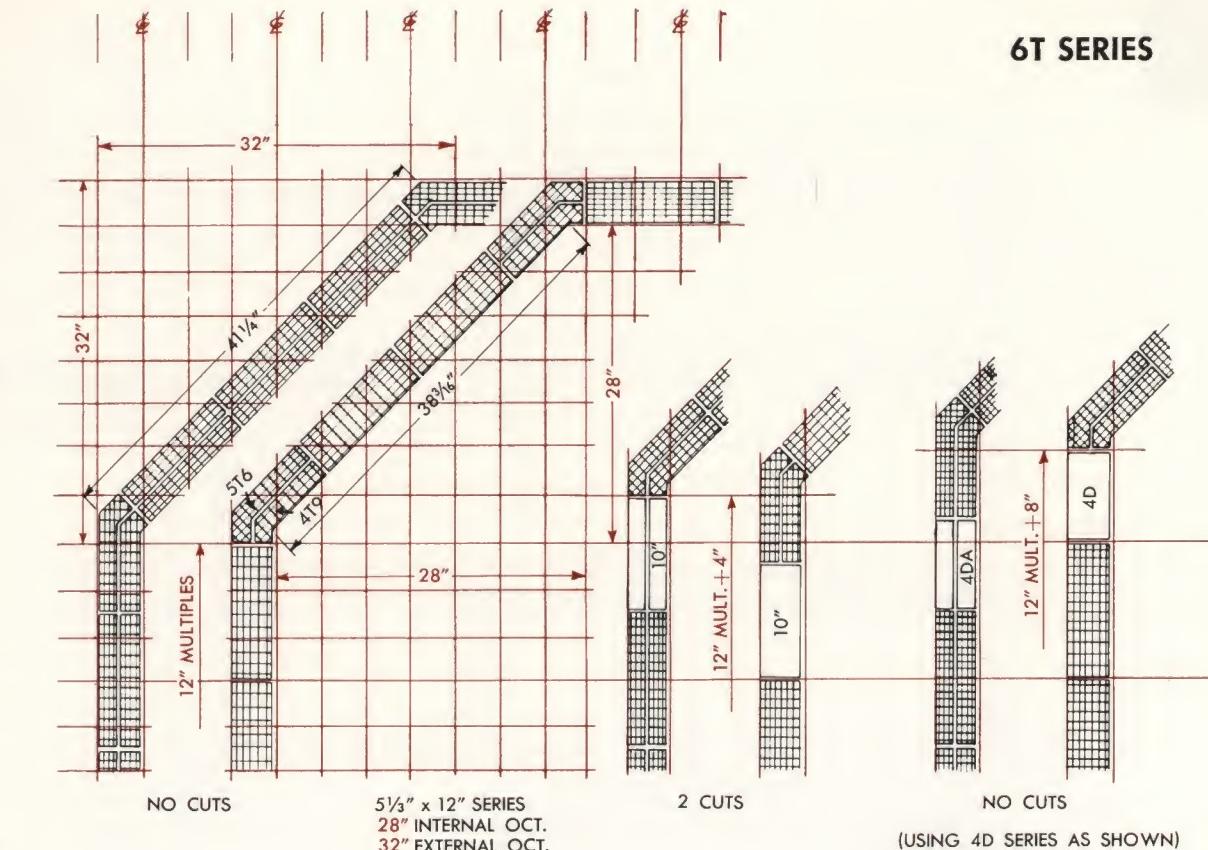
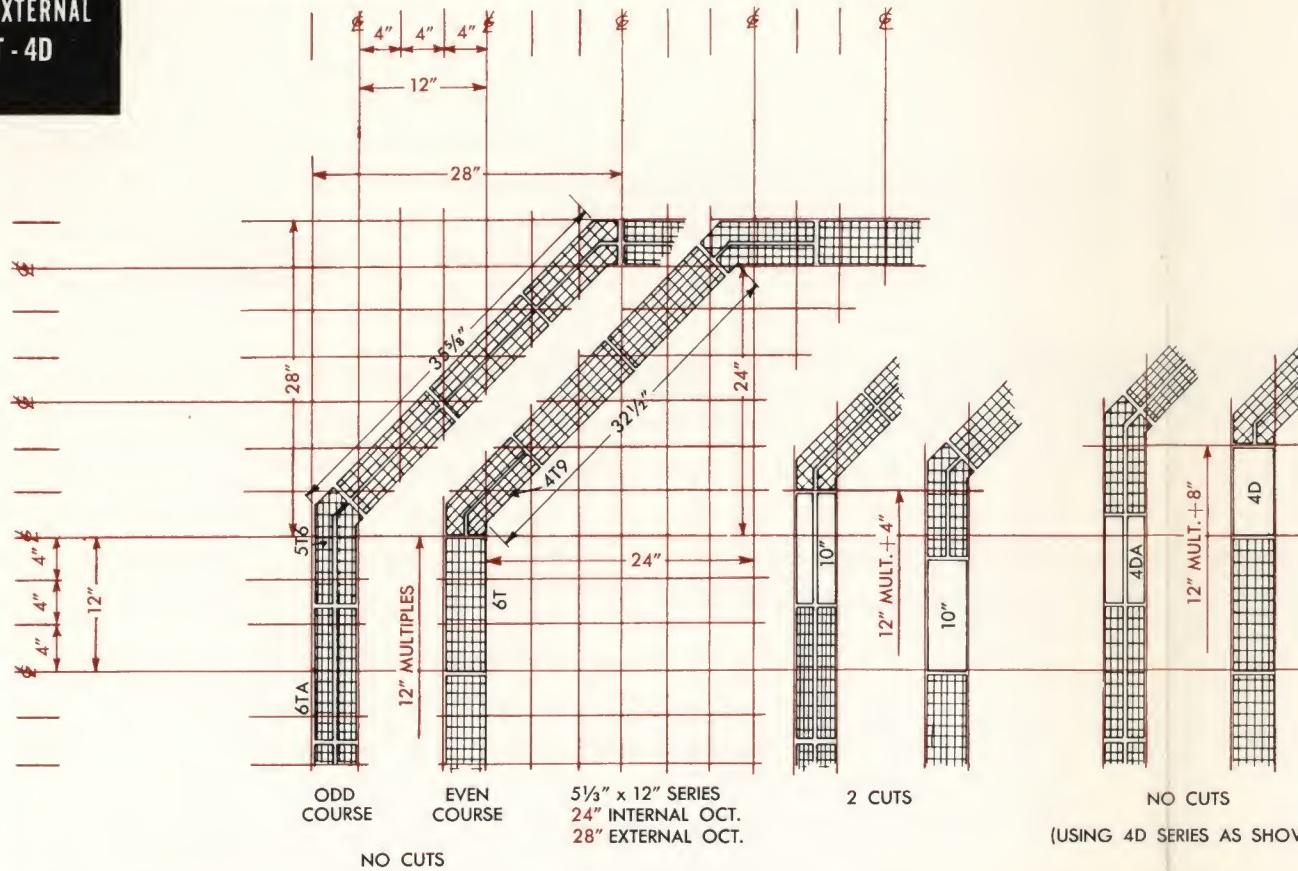


INTERNAL
COVED CORNER
6T
4" 6" 8"
WALLS

STARK

CERAMICS, INC.





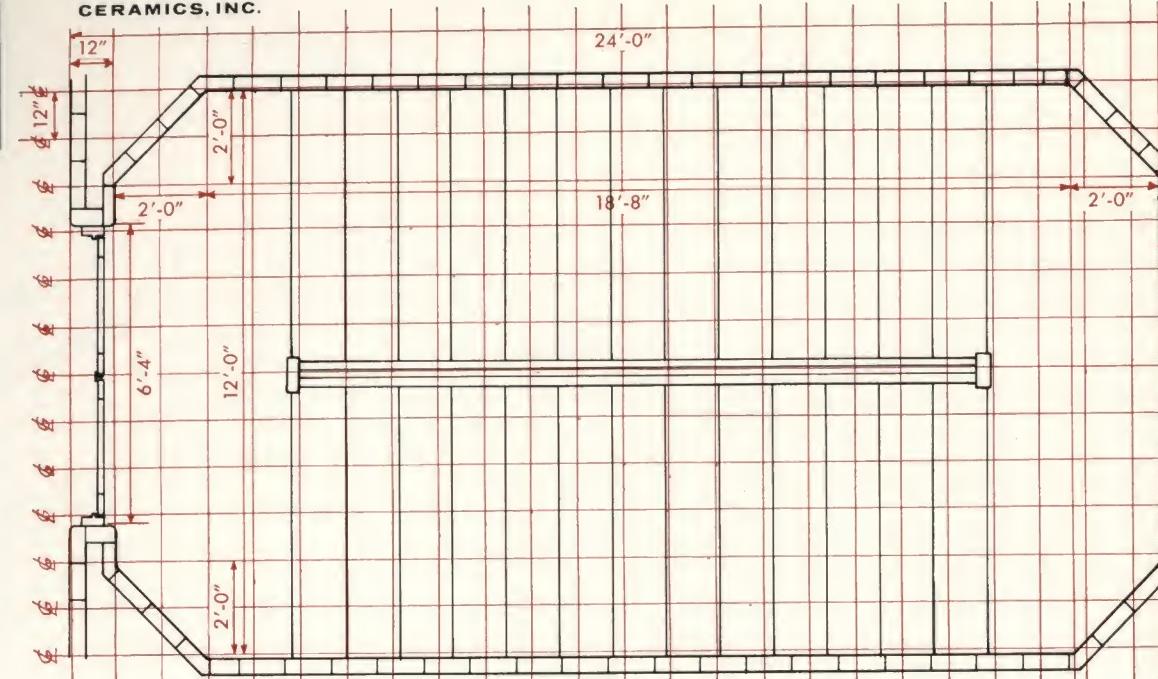
**OCTAGON CORNERS
INTERNAL AND EXTERNAL**

OCTAGON
CORNERS
TYPICAL USES

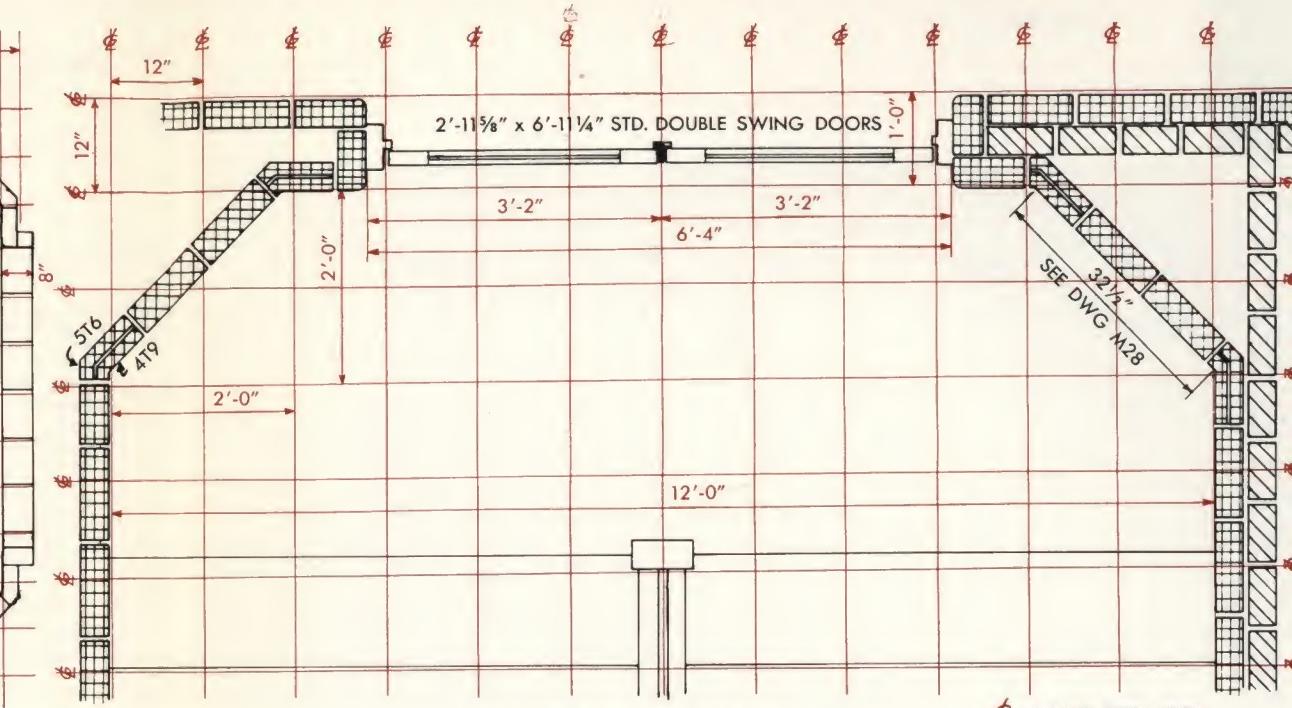
6T

STARK

CERAMICS, INC.

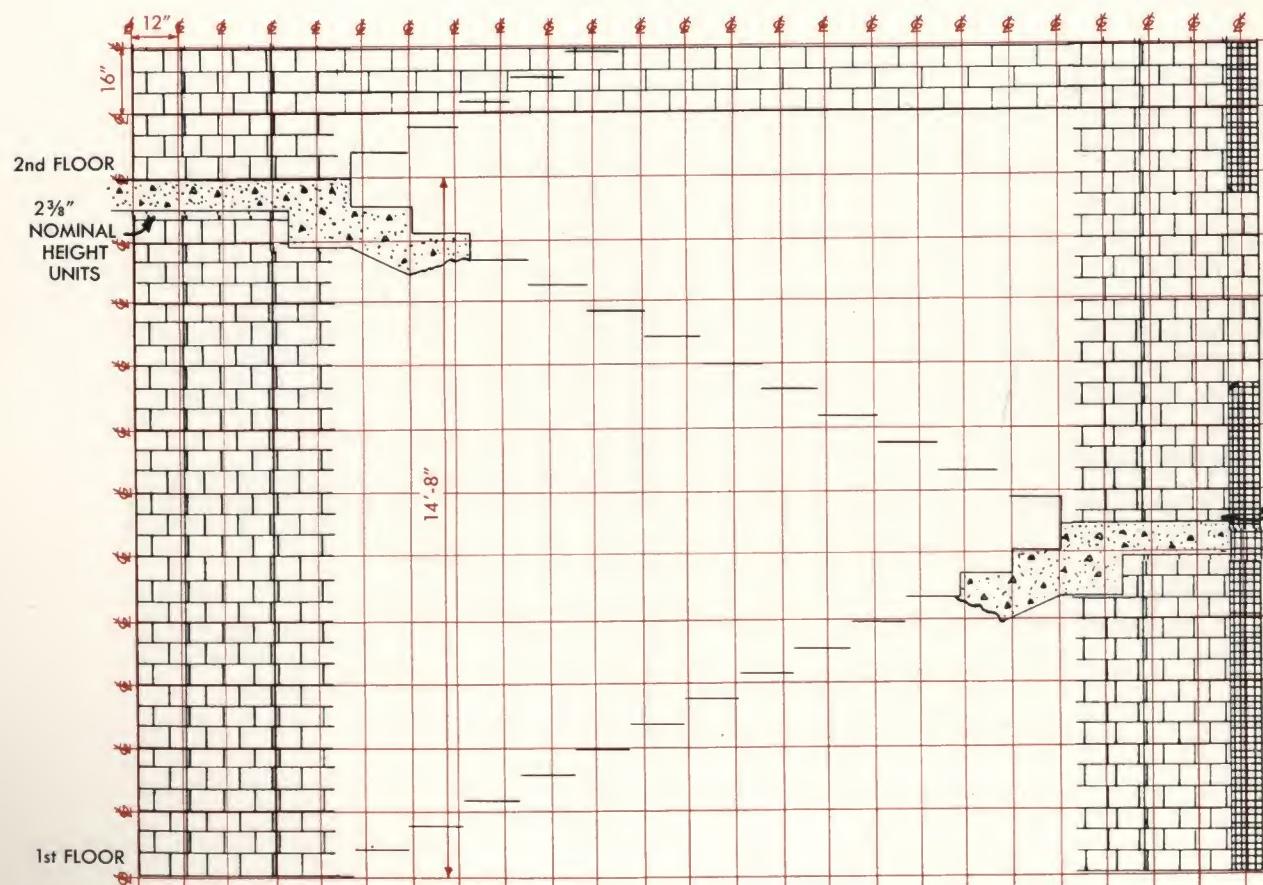


PLAN VIEW STAIRWELL



ENLARGED PLAN VIEW STAIR LANDING

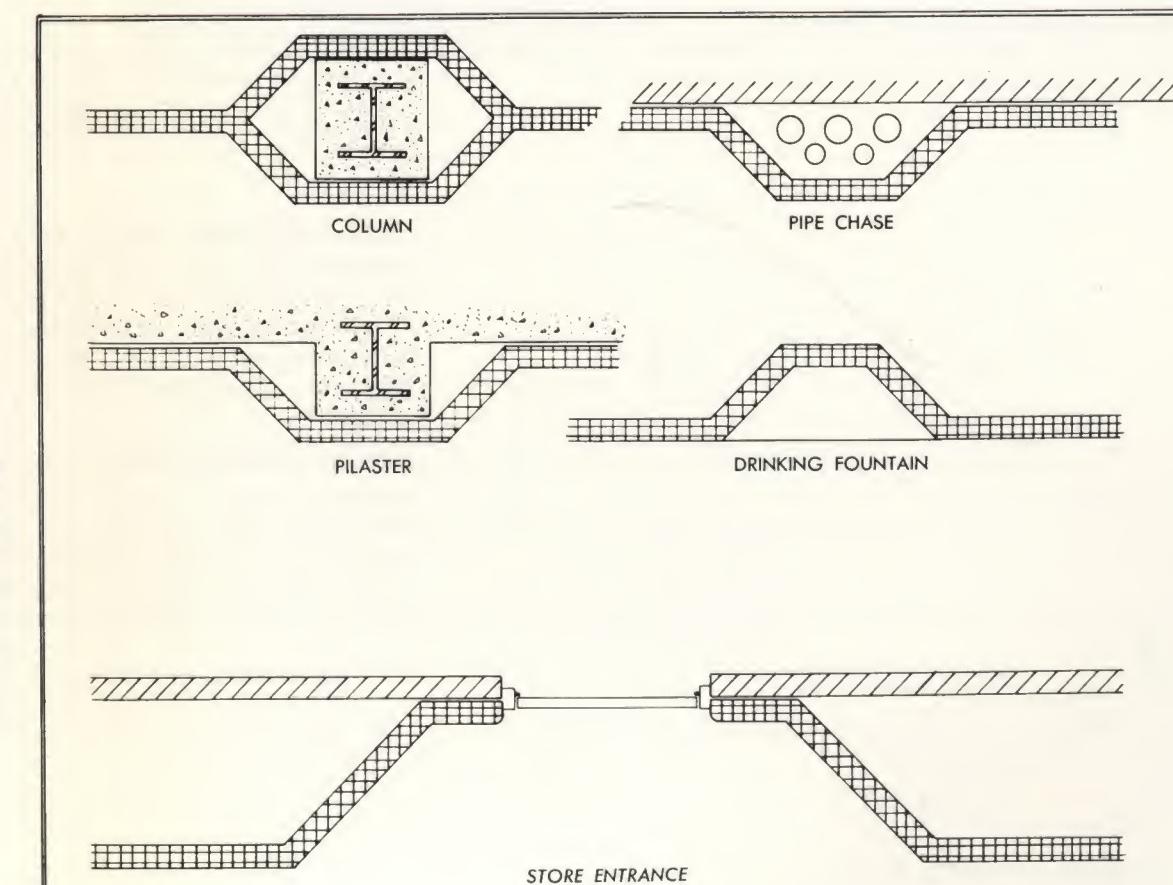
MAJOR GRID LINES



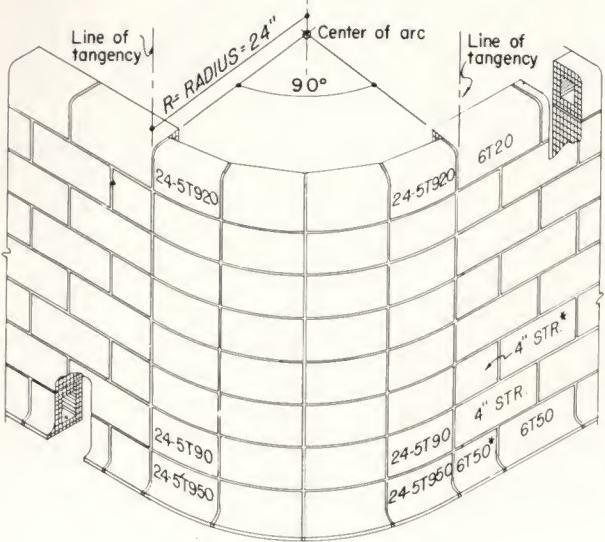
ELEVATION VIEW STAIRWELL

OCTAGON CORNERS
TYPICAL USES

NOTE: RED LINES INDICATE GRID LINES. RED DIMENSIONS ARE FROM GRID LINES. 12" x 16" MAJOR GRID ON ELEVATION. 12" x 12" MAJOR GRID ON PLAN.

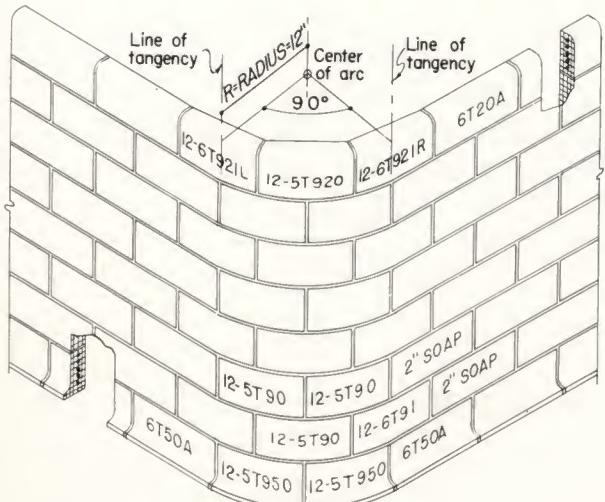


VARIOUS USES FOR OCTAGONS



24" External Radial Corner.

With stack bond construction in curved portion as shown, no special starter units are required.



12" External Radial Corner.

With running bond construction in curved portion, special starter units are required in field, cap and base courses. (Units 6T91, 6T921-R and L and possibly 6T951-R and L, depending upon joint positions of starting course).

TABLE 1				
Number of units in a quarter circle	Radius of Quarter Circle containing exact number of units listed in left column, when horizontal dimension is:			
	3-3/4"	5-1/16"	7-3/4"	11-3/4"
	$\frac{3}{8}$ " Vertical Joints*			
5	(1' - 0-3/4")	(1' - 5")	(2' - 1-1/2")	(3' - 2-1/4")
	1' - 1-1/8"	1' - 5-3/8"	2' - 1-7/8"	3' - 2-5/8"
6	(1' - 3-1/4")	(1' - 8-3/8")	(2' - 6-5/8")	(3' - 9-7/8")
	1' - 3-3/4"	1' - 8-3/4"	2' - 7-1/8"	3' - 10-3/8"
7	(1' - 5-7/8")	(1' - 11-3/4")	(2' - 11-5/8")	(4' - 5-1/2")
	1' - 6-3/8"	2' - 0-1/4"	3' - 0-1/4"	4' - 6-1/8"
8	(1' - 8-3/8")	(2' - 3-1/8")	(3' - 4-3/4")	(5' - 1-1/8")
	1' - 9"	2' - 3-3/4"	3' - 5-3/8"	5' - 1-3/4"
	$\frac{1}{4}$ " Vertical joints			
9	1' - 11"	2' - 6-1/2"	3' - 9-7/8"	5' - 8-3/4"
10	2' - 1-1/2"	2' - 9-7/8"	4' - 3"	6' - 4-3/8"
11	2' - 4"	3' - 1-1/4"	4' - 8"	7' - 0"
12	2' - 6-5/8"	3' - 4-5/8"	5' - 1-1/8"	7' - 7-3/4"
13	2' - 9-1/8"	3' - 8"	5' - 6-1/4"	8' - 3-1/4"
14	2' - 11-3/8"	3' - 11-3/8"	5' - 11-1/4"	8' - 11"
15	3' - 2-1/4"	4' - 2-3/4"	6' - 4-3/8"	9' - 6-5/8"

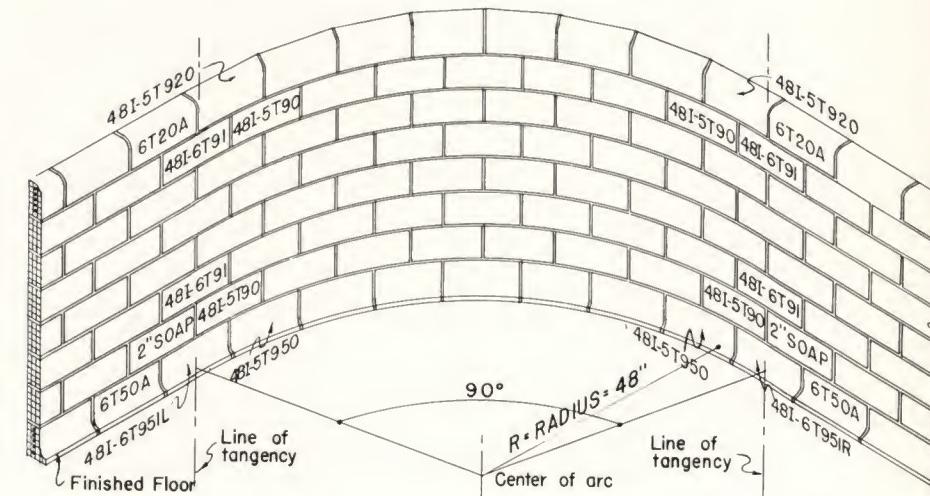
NOTES:

RADIAL CORNERS USING RADIAL SHAPES

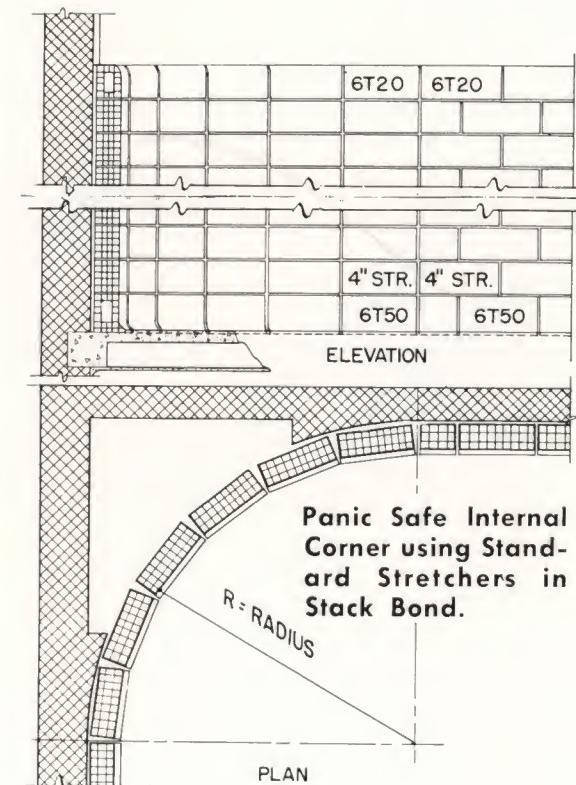
Standard external radial shapes are available in 12" or 24" radii. Standard internal radial shapes are available in 48" radius only. In ordering, prefix external radius in inches to shape number. Internal radial units are indicated by prefixing the letter "I" to corresponding external shape number.

RADIAL CORNERS USING STANDARD STRETCHERS

Standard stretcher units in stack bond construction provide panic-safe corners with radii listed in Table 1. Typical center running bond construction with the "6T" series stretchers is shown in the straight wall sections and the same units in stack bond are used in the curved wall.



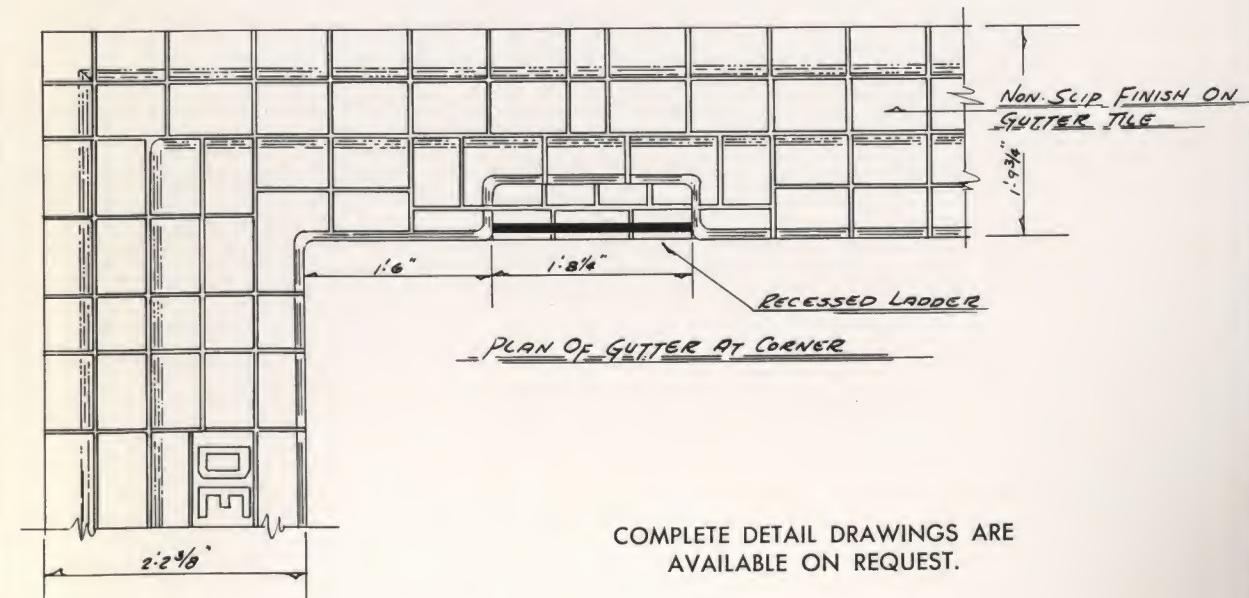
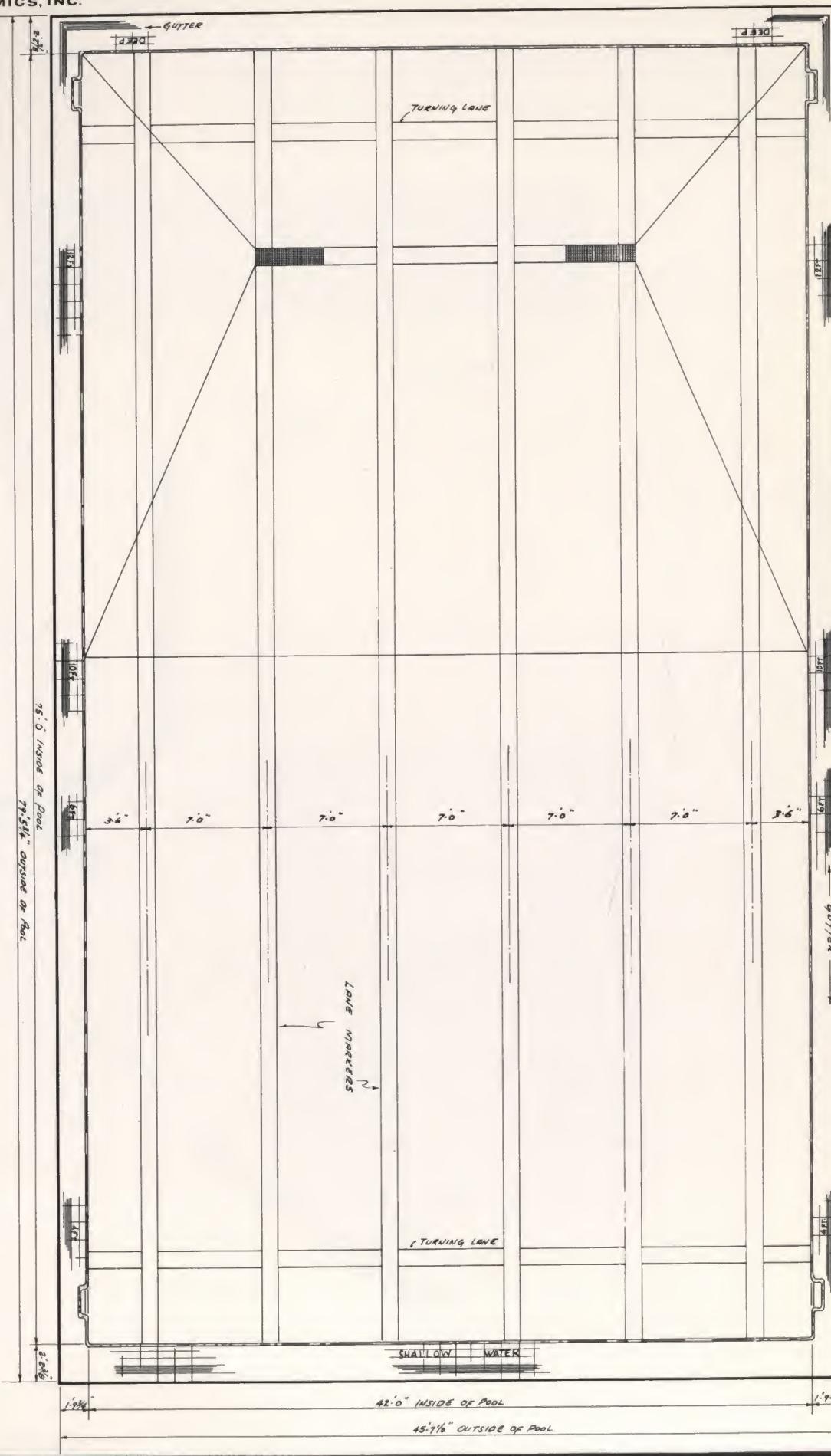
48" Internal Radial Corner.



STARK CERAMICS, INC.

CERAMICS, INC.

Plan of Poor



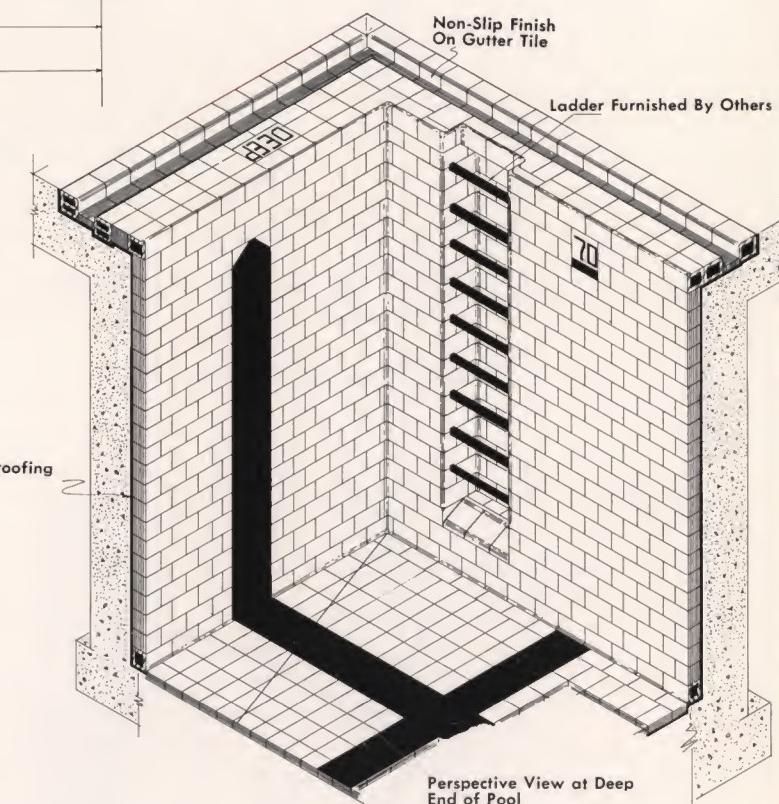
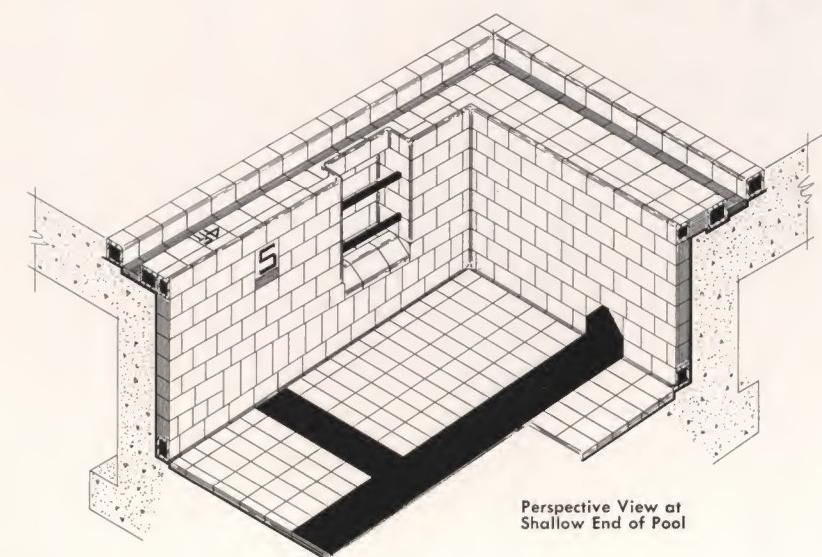
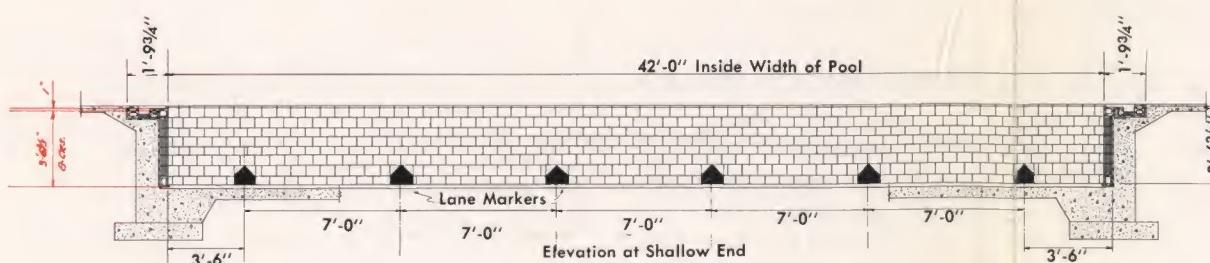
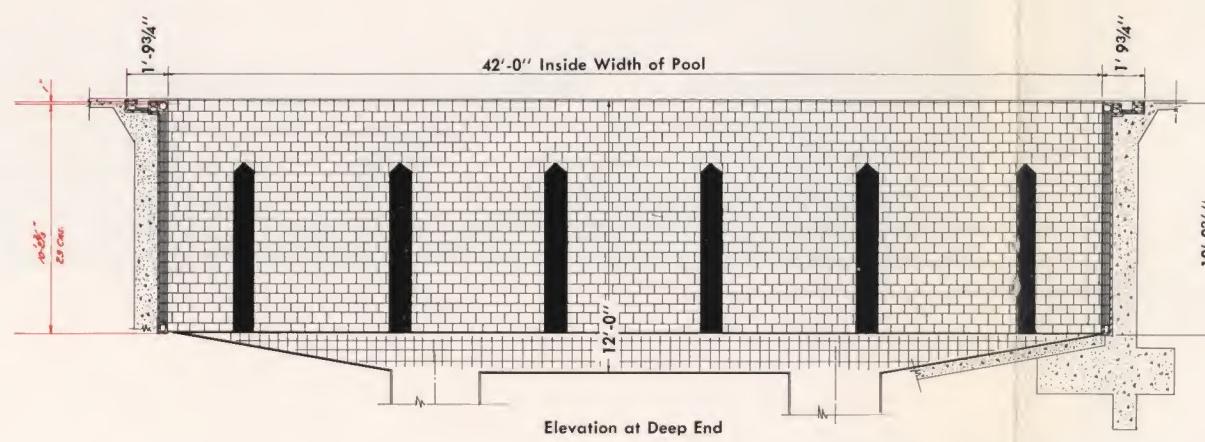
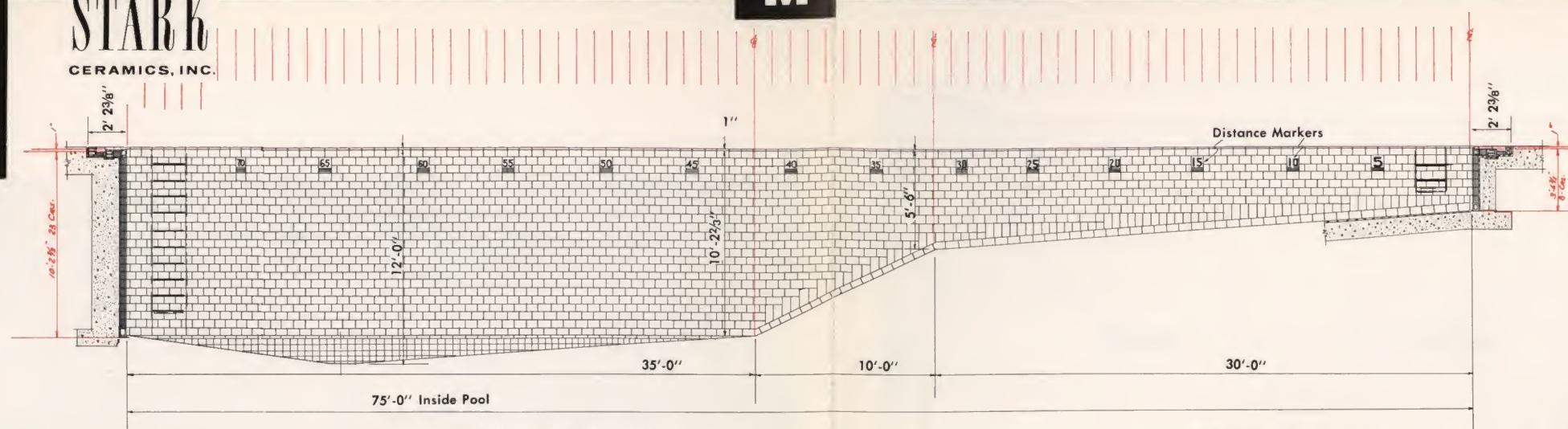
COMPLETE DETAIL DRAWINGS ARE
AVAILABLE ON REQUEST.

STARK
"ROLL-OUT"
TYPE
SWIMMING
POOL

STARK

CERAMICS, INC.

M



SECTION

C

ENGINEERED
COLORS

STARK

CERAMICS, INC.
CANTON 1, OHIO

STARK'S

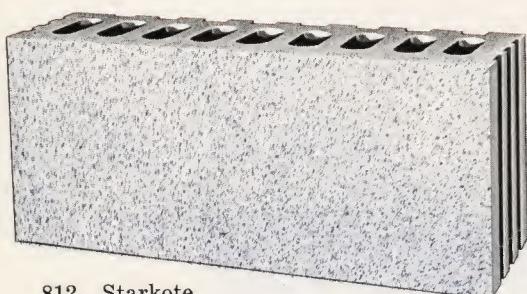
ENGINEERED



591—Light Green



524—Coral



812—Starkote



578—Ocular Green



563—Light Gray



904—Clear Glaze



551—Sunlight Yellow



583—Tan

ACCENT COLORS

C O L O R S



576—Aqua Blue



680—Cream Mottled



665—Grey Mottled



694—Green Mottled

580—Accent Brown



495—Accent Light Green



429—Accent Red



498—Accent Dark Green



423—Accent Orange



455—Accent Yellow



472—Accent Light Blue



477—Accent Dark Blue



590—Accent Black



STARK ENGINEERED COLORS

This is an era of color. Architects, designers, decorators, builders and owners are all conscious of the usefulness and appeal of color.

The ceramic industry is a leader in the research and development of new colors...colors that fulfill a function...colors that have a wide appeal. The burden to develop the proper shades and hues is especially heavy on ceramic tile producers because the colors must "live" for many years...they must anticipate the future.

Stark Ceramics has long been a pioneer in the development of colors that have wide appeal, function and beauty. Important, too, is Stark's consistency of shade from month to month and year to year.

CERAMIC COLOR GLAZE

The finest type of glazed ware, impervious, opaque, resistant to acids and will not craze.

Recommended for all interior usages where the finest quality, uniformly shaded and distinctively attractive colors are desired. Produced in the following shades and finishes.

Straight shade field colors

Shade 524—Coral
Shade 551—Sunlight Yellow
Shade 563—Light Gray
Shade 576—Aqua Blue
Shade 578—Ocular Green

Shade 583—Tan
Shade 591—Light Green
Shade 904—Clear Glaze
Shade 812—Starkote

Mottled field colors

Shade 694—Green Mottled
Shade 665—Grey Mottled

Shade 680—Cream Mottled

904 CLEAR GLAZE

A smooth, lustrous cream shade in a tinted glaze that meets the requirements of most jobs. We recommend this glaze for all jobs where a special color is not required. 904 clear glaze furnishes the maximum in quality with a minimum of cost.

812 STARKOTE

Starkote is a warm blue-gray speckle, ceramic glaze that blends perfectly with any color scheme and any architectural style. Starkote is acid-resistant, impervious and will not craze.

ACCENT COLORS

Stark Accent Colors were designed to fulfill today's color preferences. These rich colors are engineered to Facing Tile Institute standards.

Stark Accent Colors have been extensively researched throughout the construction field, to please architects, builders, decorators and the public. In addition to this, Stark Accent Colors complement or harmonize with present straight field and mottle colors.

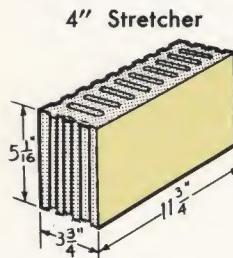
580—Accent Brown	423—Accent Orange
495—Accent Light Green	455—Accent Yellow
429—Accent Red	472—Accent Light Blue
498—Accent Dark Green	477—Accent Dark Blue
	590—Accent Black

**STANDARD
SHAPES
AND
SIZES**

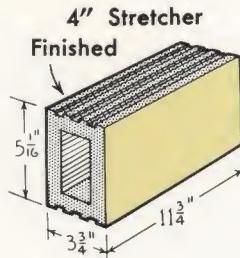
STARK

CERAMICS, INC.
CANTON 1, OHIO.

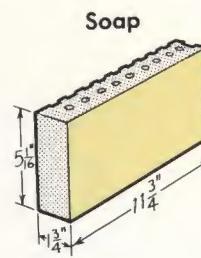
STANDARD STRETCHERS



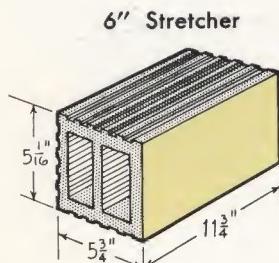
6T
6Tgr (shown)
Also available
6S—2 3/8" high



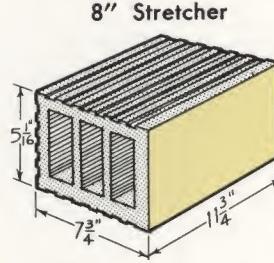
6TCD
6TCsu
6TCsm*



6TA
Also available
6SA—2 3/8" high



6TC60
6TC60gr (shown)
6TC60su



6TC80
6TC80gr (shown)
6TC80su

*Furnished in glazed units subject to manufacturers accumulation.

NOTES

6" AND 8" BED DEPTHS AVAILABLE AS BONDING UNITS

Shipments may be facilitated by simply ordering stretchers (Example 6T) thereby permitting the manufacturer to ship either the scored or smooth back stretchers or a mixture. If job conditions require that the back be of a certain type, they may be obtained by ordering the following: sm

—unselected glazed back; su—unselected, un-scored, unglazed back; gr—scored or grooved back. Type and direction of SCORING and CORING are optional with the manufacturer. In general, the manufacturer standardizes on either the horizontal or vertical coring.

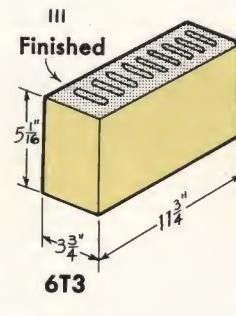
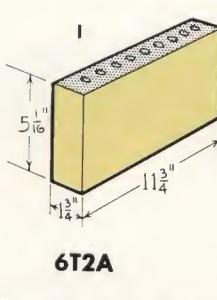
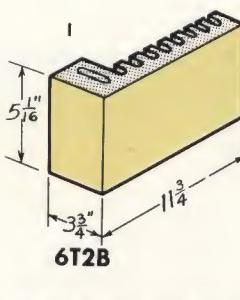
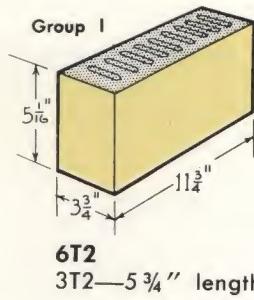
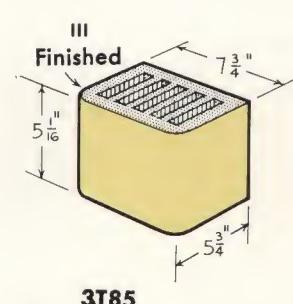
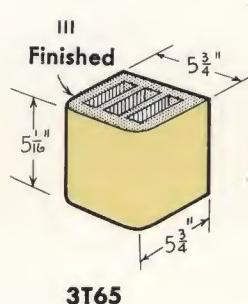
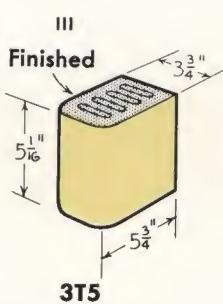
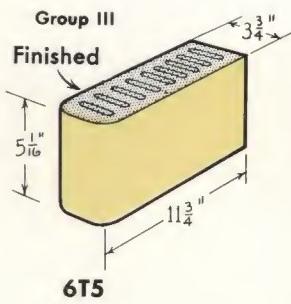
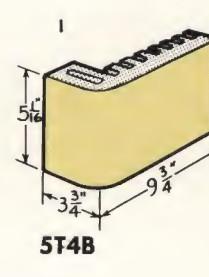
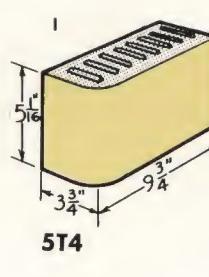
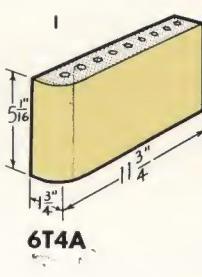
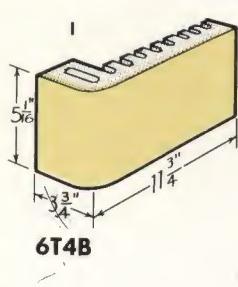
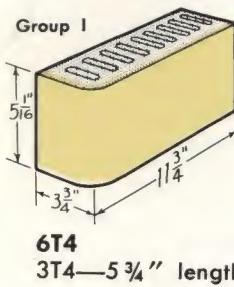
"Group numbers (shown in Roman numerals) are furnished for convenience in computing relative cost of shapes. Group I being the least expensive."

Note: Nominal dimensions are usually given for returns, reveals, lengths, etc.—2" is actually 1 3/4", 4" is actually 3 3/4", 6" is actually 5 3/4", 8" is actually 7 3/4", 10" is actually 9 3/4", 12" is actually 11 3/4", 16" is actually 15 3/4". However, all dimensions shown on shape drawings are actual.

BASIC SHAPES

nominal 5 1/3" x 12" face — "6T" SERIES

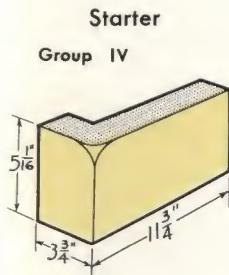
CORNERS AND CLOSURES



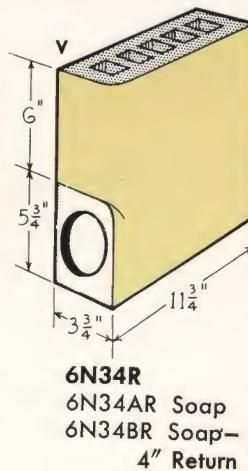
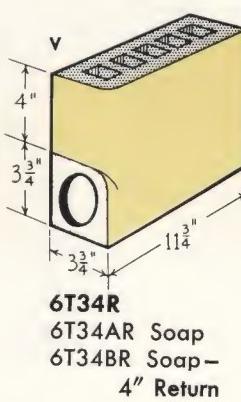
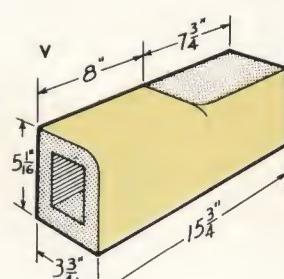
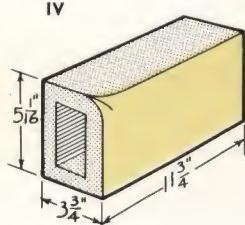
An extra charge is made for cutting lengths or heights other than those shown or listed.
A power driven saw should be used for all cutting on the job.

S

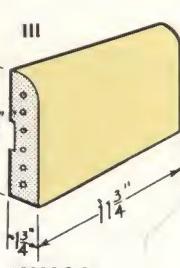
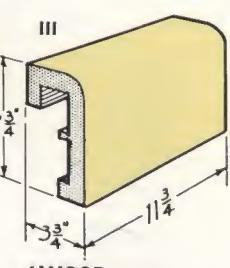
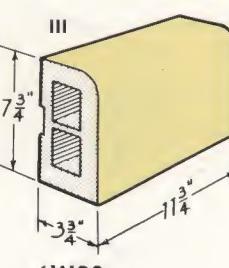
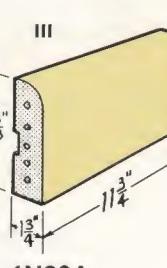
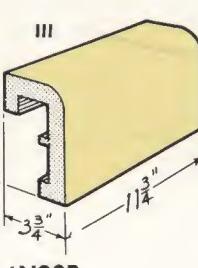
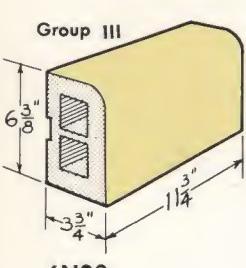
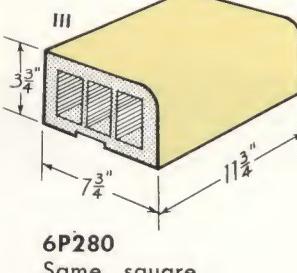
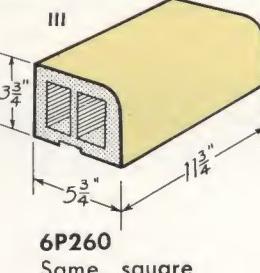
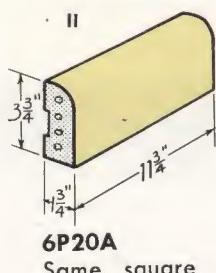
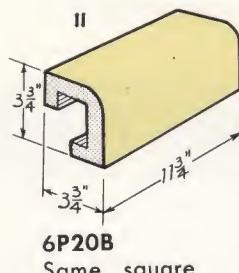
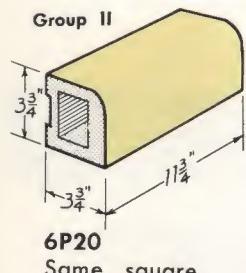
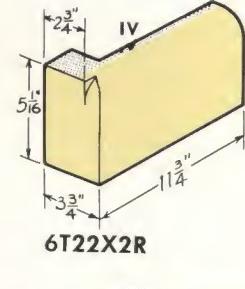
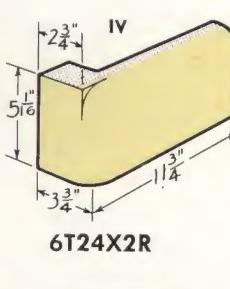
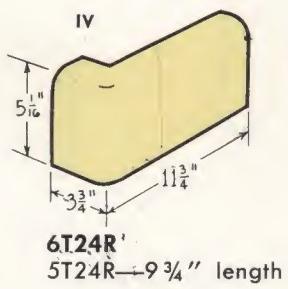
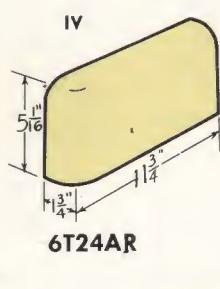
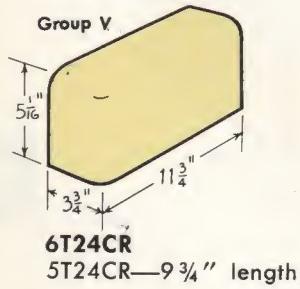
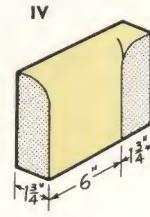
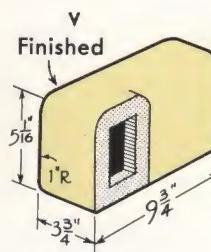
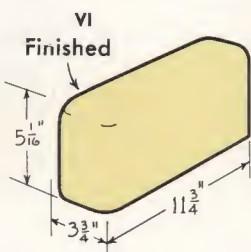
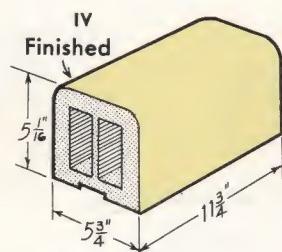
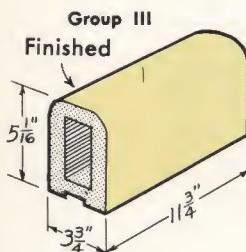
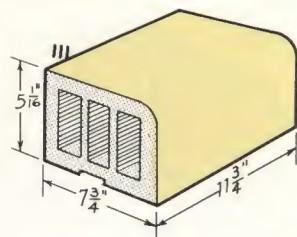
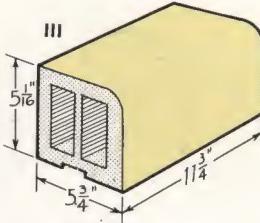
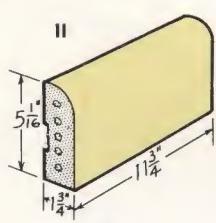
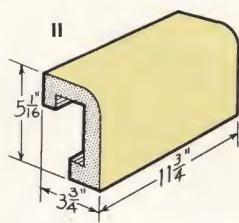
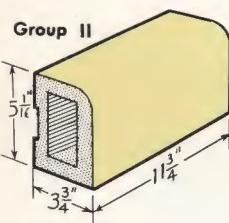
STARTER AND MITERS



Use with slope sills
and bullnose jambs.



SILLS, CAPS AND LINTELS

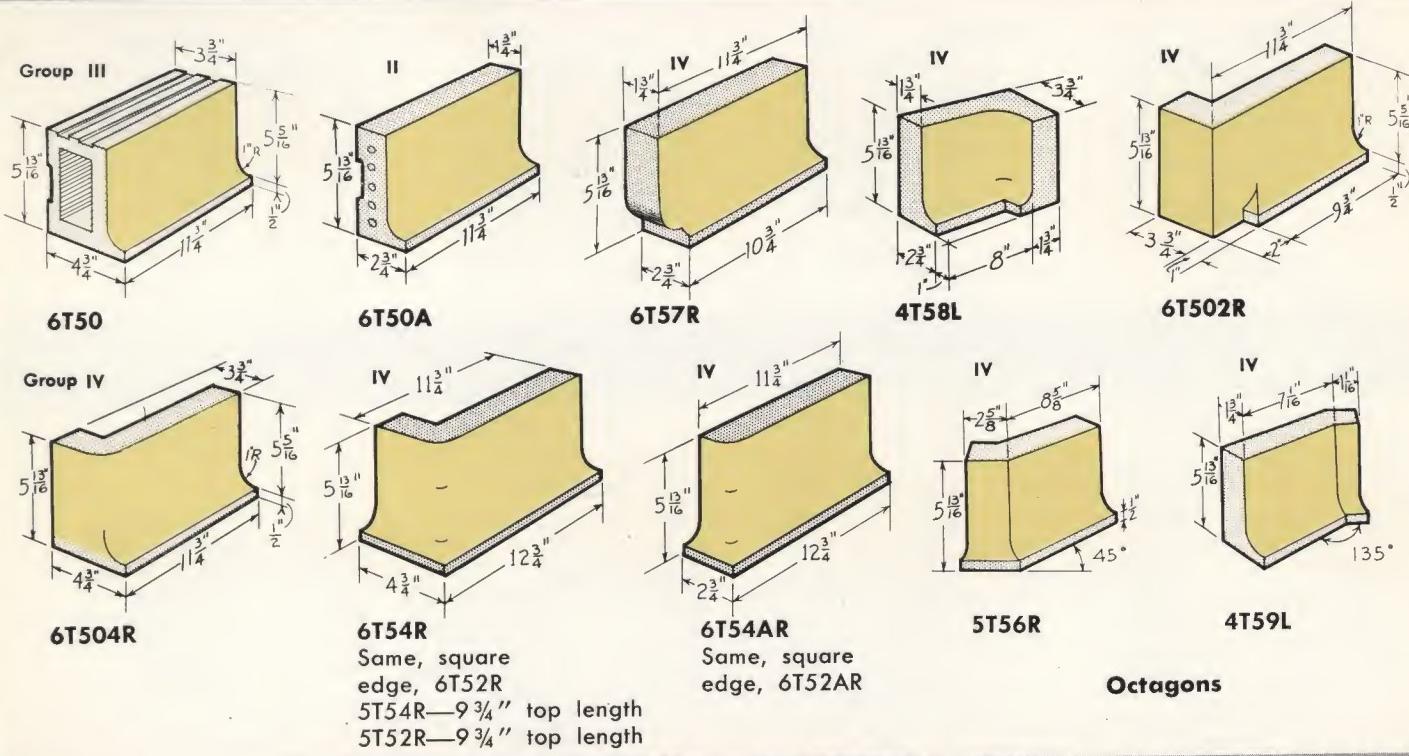


Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

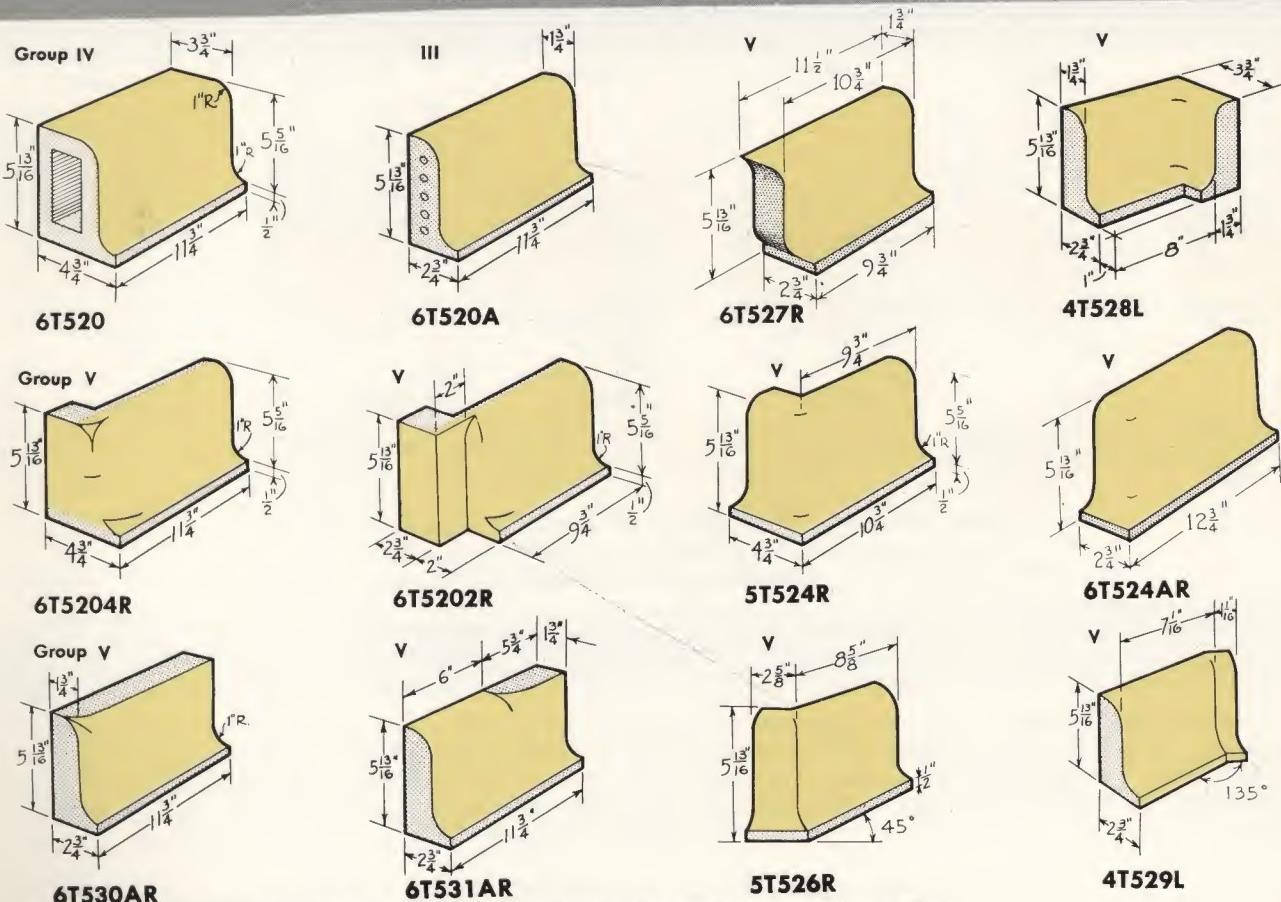
SUPPLEMENTARY SHAPES

nominal 5 1/3" x 12" face—"6T" SERIES

COVE BASE STRETCHERS AND FITTINGS

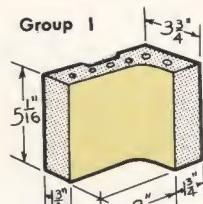


ROUND TOP COVE BASE

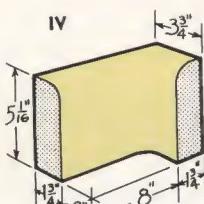


Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

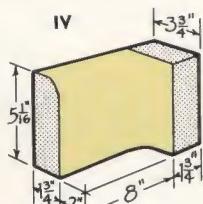
COVED INTERNAL CORNERS



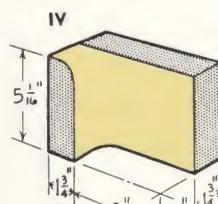
4T8



4T28L

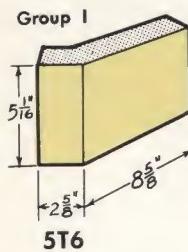


4T208L

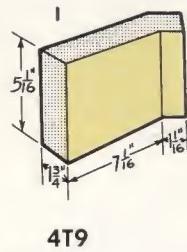


4T218R

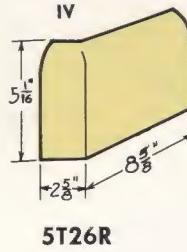
OCTAGONS (45°) – FIELD AND CAP UNITS



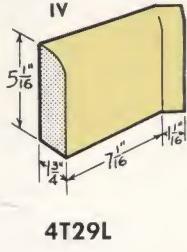
5T6



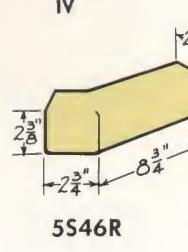
4T9



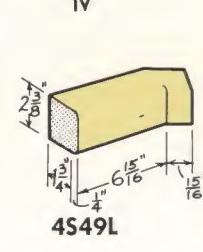
5T26R



4T29L



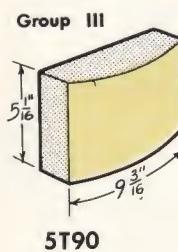
5S46R



4S49L

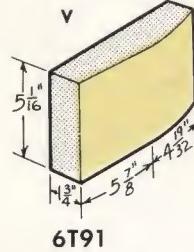
RADIALS – FIELD, CAP AND BASE UNITS

Stretcher



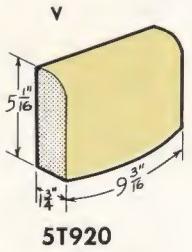
5T90

Starter



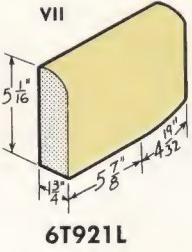
Also available
5S90—2 3/8" high

Stretcher



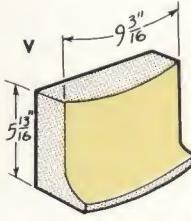
5T920

Starter



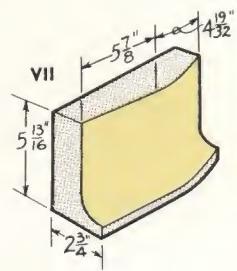
6T921L

Stretcher



5T950

Starter



6T951L

Note: INTERNAL radial shapes are similar in numbering and dimensioning. In ordering by number, simply prefix the letter "I" to the corresponding external shape number.

Internal radial shapes are manufactured for a radius of 48" as a standard.

Note: Standard external radii for the above shapes are 12" and 24". Standard internal radius is 48". In ordering, prefix radius in inches to shape number (Example: 24-5T90 would be a field stretcher for a 24" external radius.)

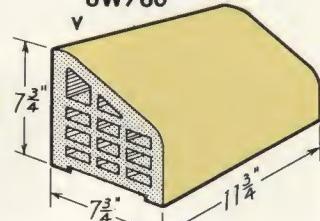
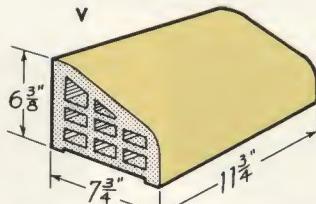
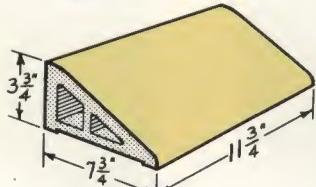
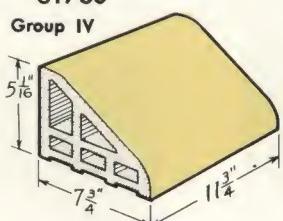
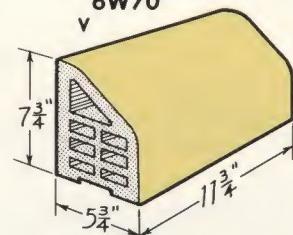
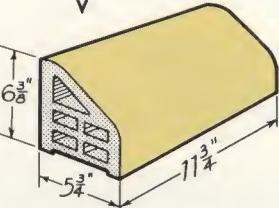
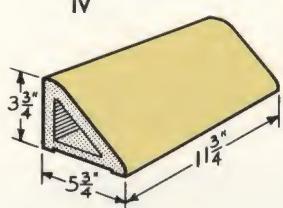
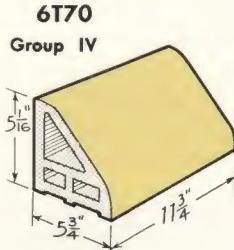
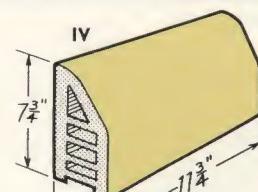
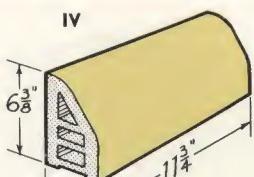
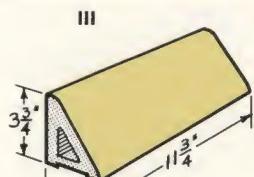
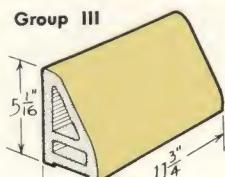
Non-standard radii in increments of 6" will be furnished. Special dies required must be provided by the purchaser and non-standard radii Group III shapes will be Group VI, Group V shapes will be Group X and Group VII shapes will be Group XIV.

Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

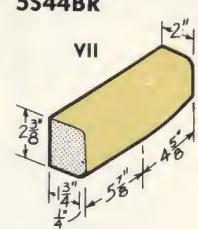
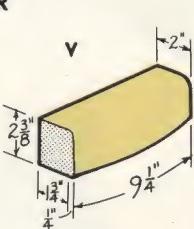
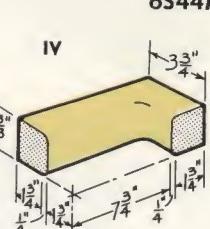
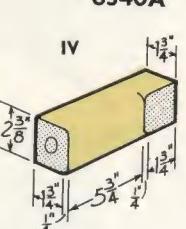
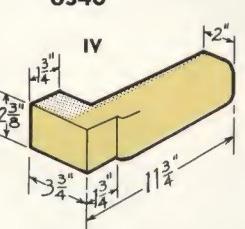
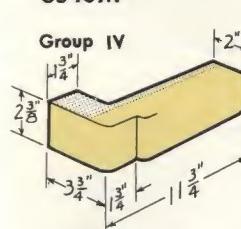
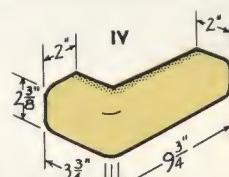
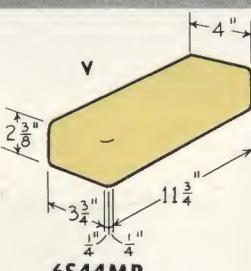
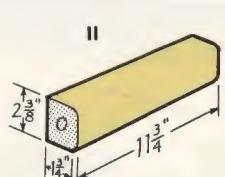
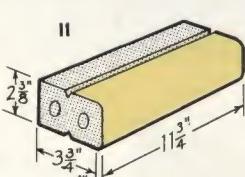
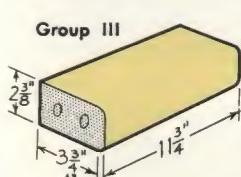
SUPPLEMENTARY SHAPES

nominal 5 1/3" x 12" face—"6T" SERIES

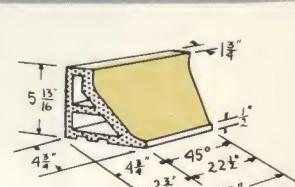
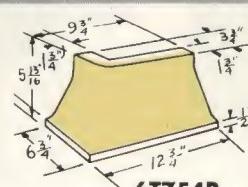
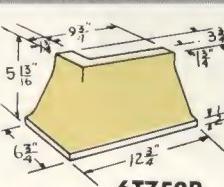
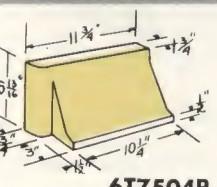
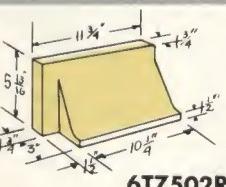
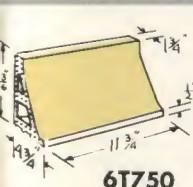
SLOPE SILLS



BOX CAP MOLDS



SPLAYED BASE



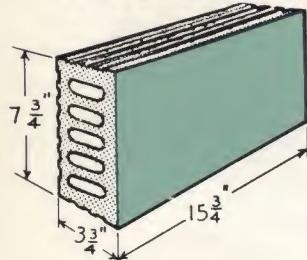
6T757R = 45°
6T759R = 22 1/2°

S-7

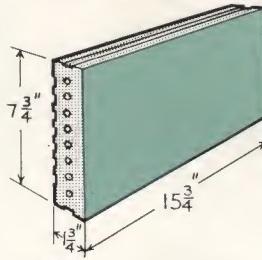
Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

STANDARD STRETCHERS

4" Stretcher



Soap



8W

4W 7 3/4" length
Also available
8P—3 3/4" height
8W—SU

Shipments may be facilitated by simply ordering stretchers (Example 8W) thereby permitting the manufacturer to ship either the scored or smooth back stretchers or a mixture. If job conditions require that the back be of a certain type, they may be obtained by ordering the following:

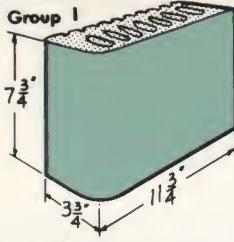
NOTES

su—unselected, unscored, unglazed back; gr—scored or grooved back. Type and direction of SCORING and CORING are optional with the manufacturer. In general, the manufacturer standardizes on either the horizontal or vertical coring.

"Group numbers (shown in Roman numerals) are furnished for convenience in computing relative cost of shapes. Group I being the least expensive."

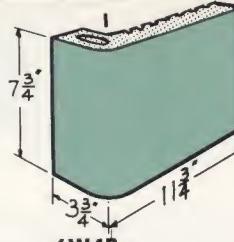
Note: Nominal dimensions are usually given for returns, reveals, lengths, etc.—2" is actually 1 3/4", 4" is actually 3 3/4", 6" is actually 5 3/4", 8" is actually 7 3/4", 10" is actually 9 3/4", 12" is actually 11 3/4", 16" is actually 15 3/4". However, all dimensions shown on shape drawings are actual.

CORNERS AND CLOSURES



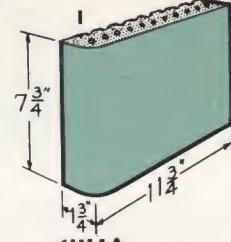
6W4

4W4—7 3/4" length
2W4—3 3/4" length



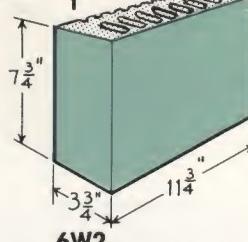
6W4B

4W4B—7 3/4" length
2W4B—3 3/4" length



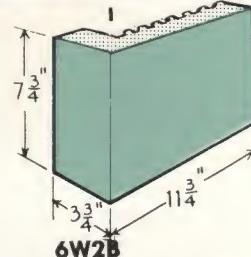
6W4A

4W4A—7 3/4" length
2W4A—3 3/4" length



6W2

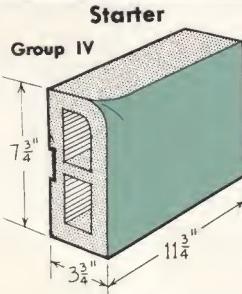
4W2—7 3/4" length
2W2—3 3/4" length



6W2B

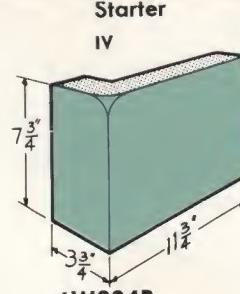
4W2B—7 3/4" length
2W2B—3 3/4" length

STARTERS AND MITERS



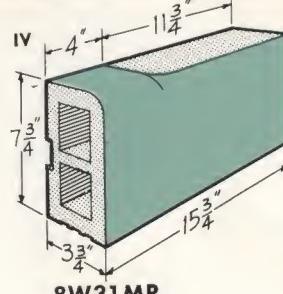
6W30R

Also available
6W30BR
6W30AR

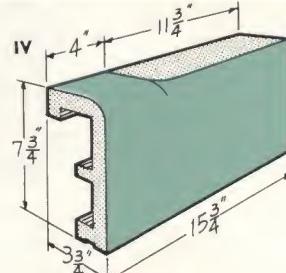


6W304R

Use with slope sills
and bullnose jambs.

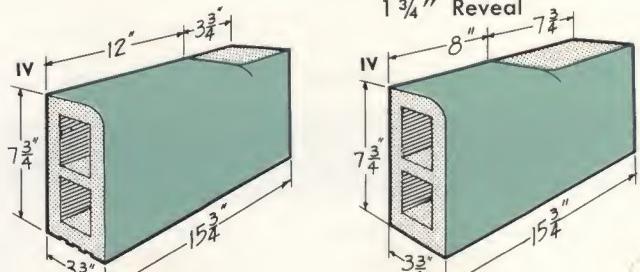


8W31MR



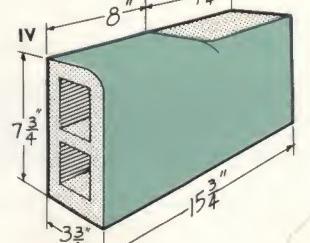
8W31MBR

8W31MAR—same,
1 3/4" Reveal



8W31QR

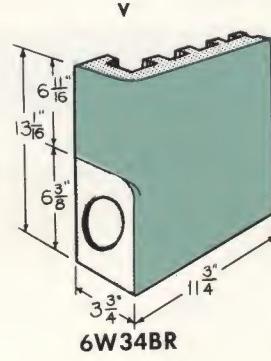
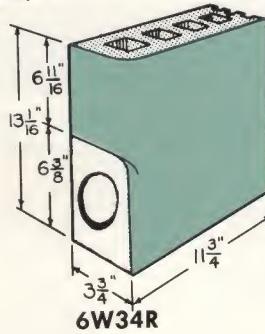
Also available
8W31QBR—same, soap,
3 3/4" Reveal
8W31QAR—soap,
1 3/4" Reveal



8W31R

Also available
8W31BR—same, soap,
3 3/4" Reveal
8W31AR—soap,
1 3/4" Reveal

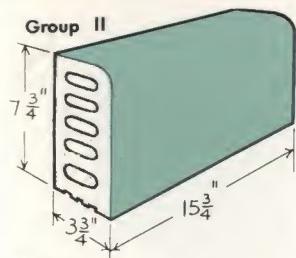
Group V



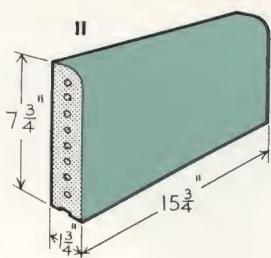
SUPPLEMENTARY SHAPES

nominal 8" x 16" face—"8W" SERIES

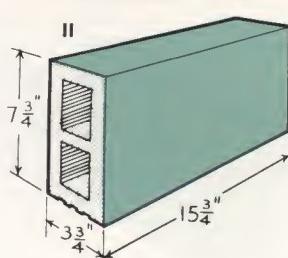
SILLS, CAPS AND LINTELS



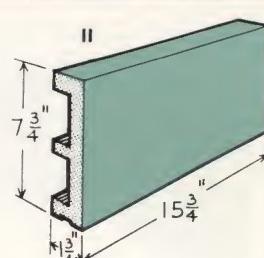
8W20
8W20B—same, soap,
 $3\frac{3}{4}$ " Reveal



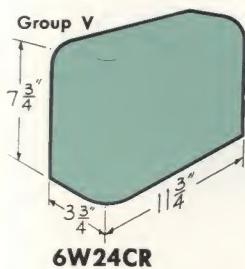
8W20A



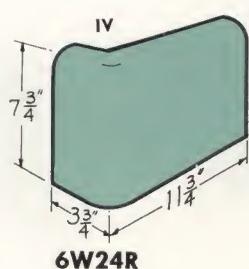
8W10
8W10B—same, soap,
4" Reveal



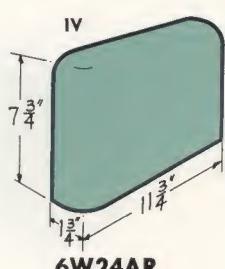
8W10A



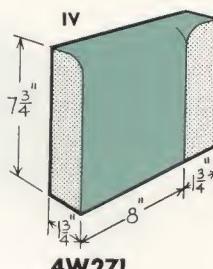
6W24CR



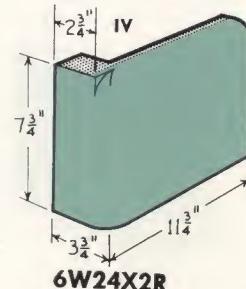
6W24R



6W24AR

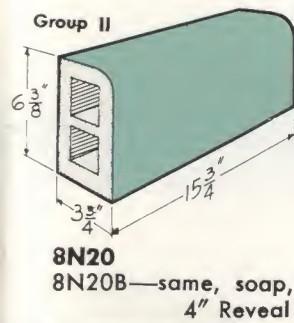


4W27L

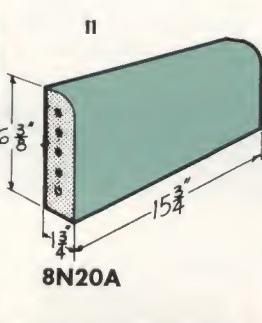


6W24X2R

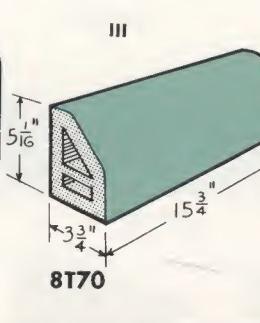
6W22X2R
Same, square edge



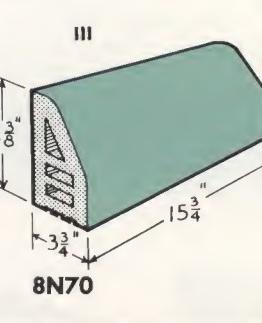
8N20
8N20B—same, soap,
4" Reveal



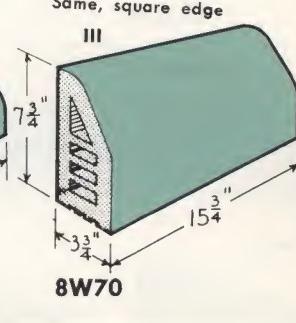
8N20A



8T70



8N70

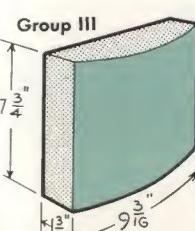


8W70

S

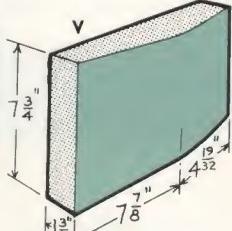
RADIALS—FIELD, CAP AND BASE UNITS

Stretcher



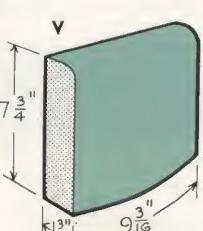
5W90

Starter



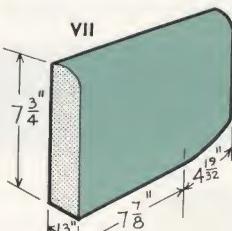
8W91

Stretcher



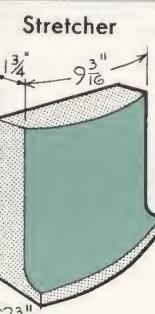
5W920

Starter



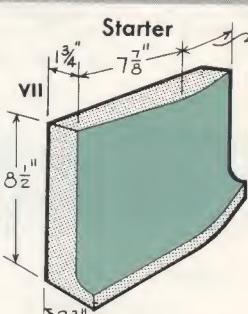
8W921L

Stretcher



5W950

Starter



8W951L

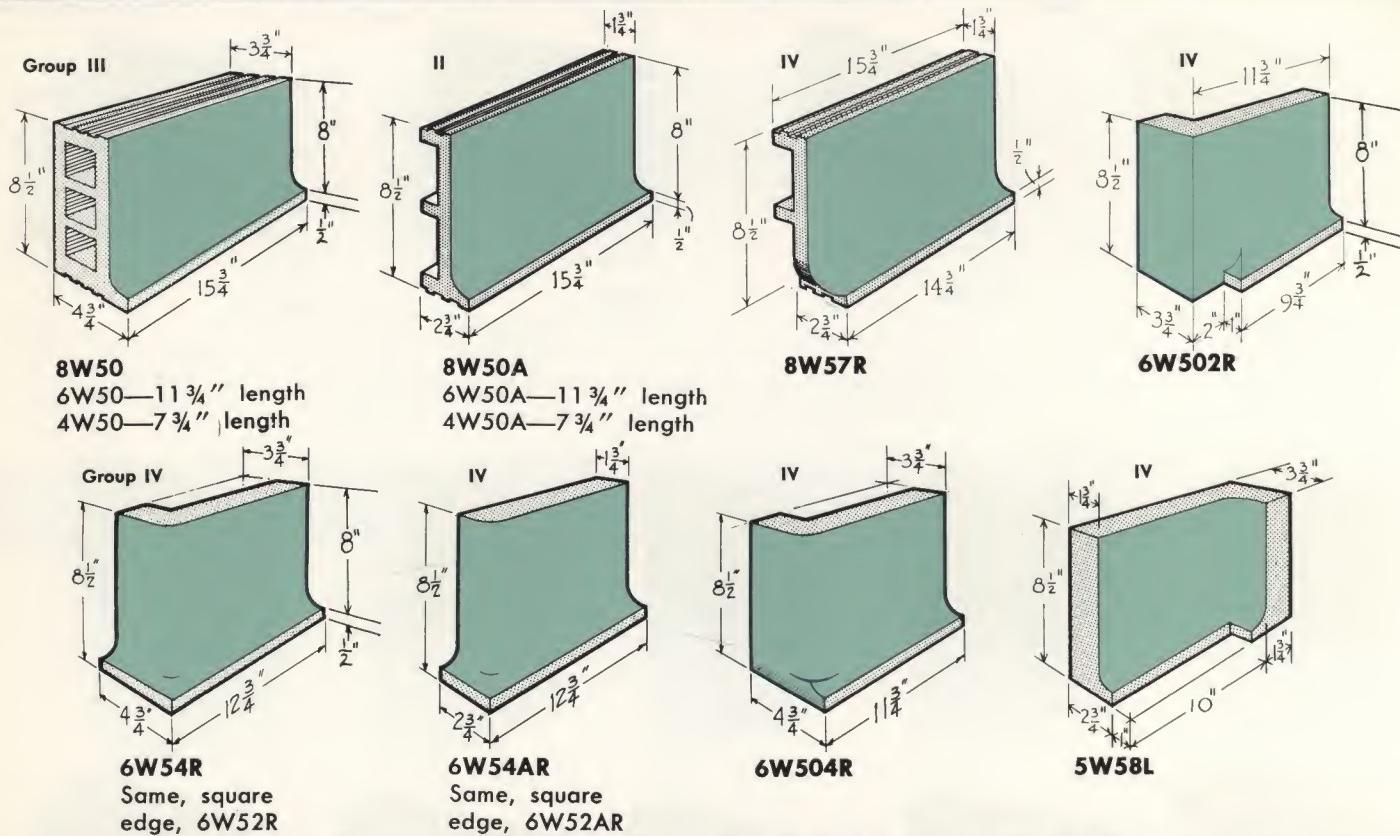
Note: Standard external radii for the above shapes are 12" and 24". Standard internal radius is 48". In ordering, prefix radius in inches to shape number (Example: 24-5W90 would be a field stretcher for a 24" external radius.)

Non-standard radii in increments of 6" will be furnished. Special dies required must be provided by the purchaser and non-standard radii Group III shapes will be Group VI, Group V shapes will be Group X and Group VII shapes will be Group XIV.

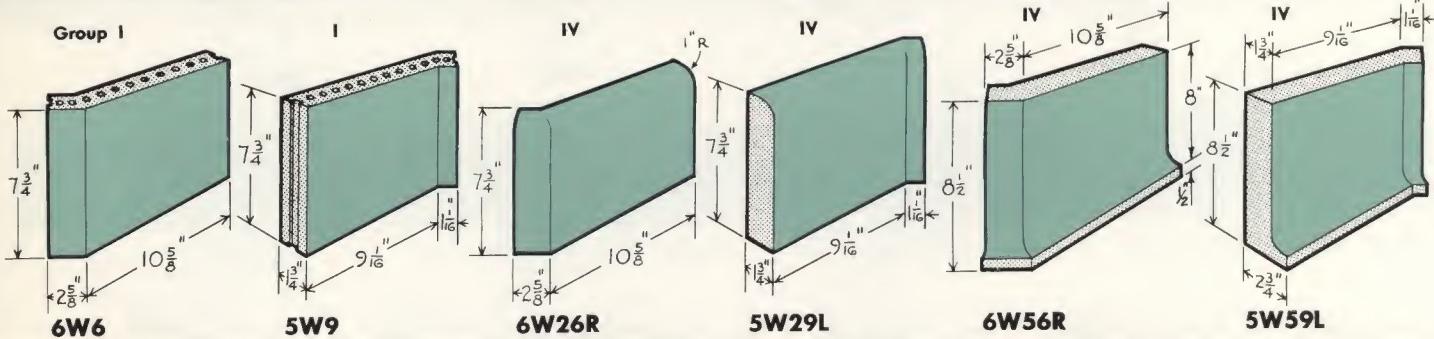
Note: INTERNAL radial shapes are similar in numbering and dimensioning. In ordering by number, simply prefix the letter "I" to the corresponding external shape number. Internal radial shapes are manufactured for a radius of 48" as a standard.

Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

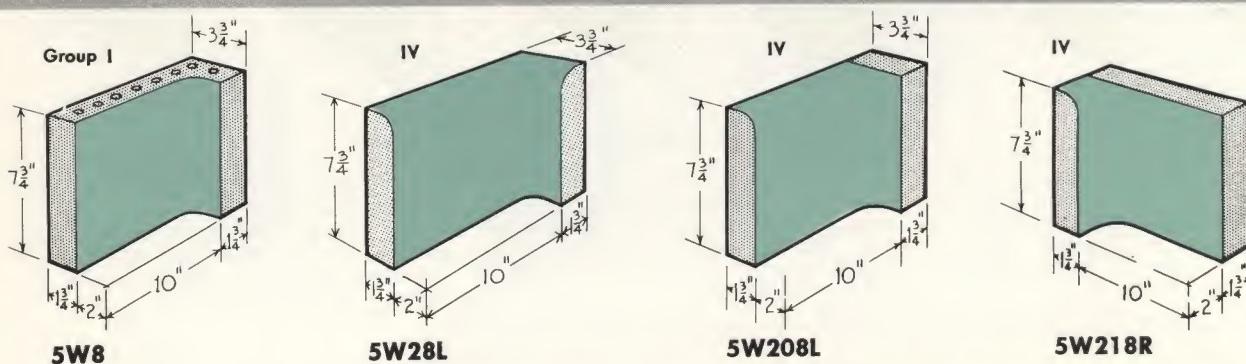
COVE BASE STRETCHERS AND FITTINGS



OCTAGONS (45°) – FIELD, CAP AND BASE UNITS

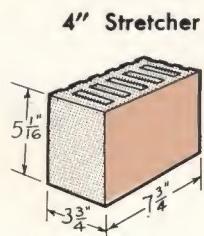


COVED INTERNAL CORNERS

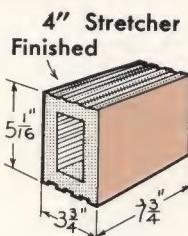


Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

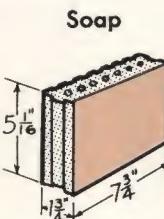
STANDARD STRETCHERS



4D
4Dgr (shown)
Also available
4S—2 3/8" high

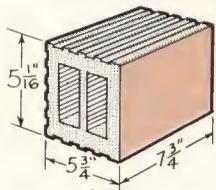


4DCD (Glazed 2 faces)
4DCsu
4DCsm*



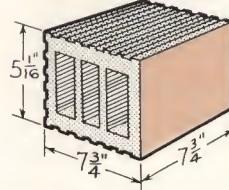
4DA
Also available
4SA—2 3/8" high

6" Stretcher



4DC60
4DC60gr (shown)
4DC60su

8" Stretcher



4DC80
4DC80gr (shown)
4DC80su

*Furnished in glazed units subject to manufacturers accumulation.

S

NOTES

6" AND 8" BED DEPTHS AVAILABLE AS BONDING UNITS

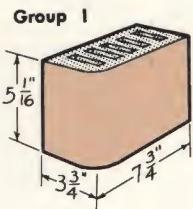
Shipments may be facilitated by simply ordering stretchers (Example 4D thereby permitting the manufacturer to ship either the scored or smooth back stretchers or a mixture. If job conditions require that the back be of a certain type, they may be obtained by ordering the following: sm

—unselected glazed back; su—unselected, un-scored, unglazed back; gr—scored or grooved back. Type and direction of SCORING and CORING are optional with the manufacturer. In general, the manufacturer standardizes on either the horizontal or vertical coring.

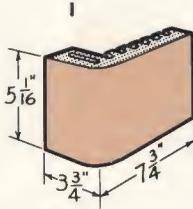
"Group numbers (shown in Roman numerals) are furnished for convenience in computing relative cost of shapes. Group I being the least expensive."

Note: Nominal dimensions are usually given for returns, reveals, lengths, etc.—2" is actually 1 3/4", 4" is actually 3 3/4", 6" is actually 5 3/4", 8" is actually 7 3/4", 10" is actually 9 3/4", 12" is actually 11 3/4", 16" is actually 15 3/4". However, all dimensions shown on shape drawings are actual.

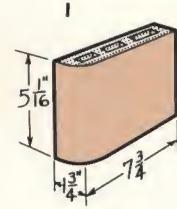
CORNERS AND CLOSURES



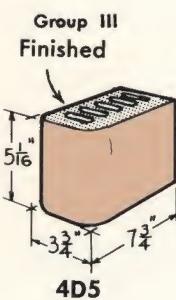
4D4
2D4—3 3/4" length



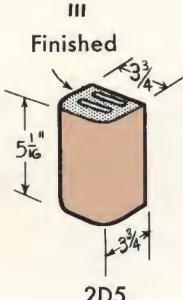
4D4B



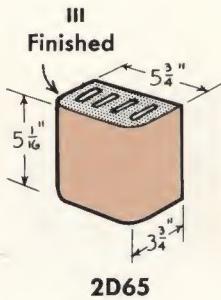
4D4A



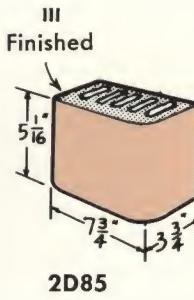
4D5



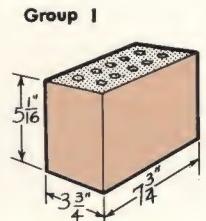
2D5



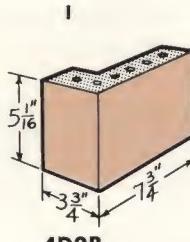
2D65



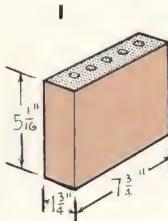
2D85



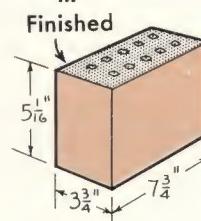
4D2
2D2—3 3/4" length



4D2B



4D2A

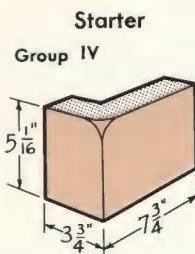


4D3

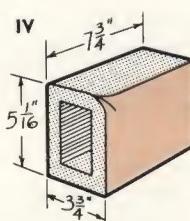
A power driven saw should be used for all cutting on the job.

An extra charge is made for cutting lengths or heights other than those shown or listed.

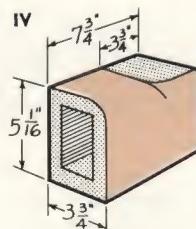
STARTER AND MITERS



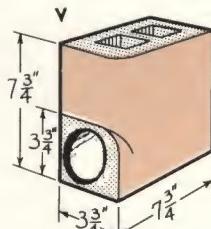
4D304R
Use with slope sills
and bullnose jambs



4D30R
4D30AR Soap



4D31R
4D31AR Soap
4D31BR Soap —
4" Reveal



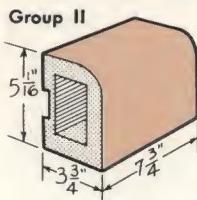
4D34R
4D34AR Soap
4D34BR Soap —
4" Return

Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

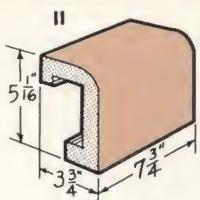
SUPPLEMENTARY SHAPES

nominal 5 1/3" x 8" face — "4D" SERIES

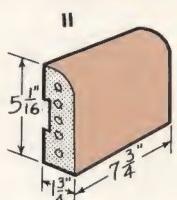
SILLS, CAPS AND LINTELS



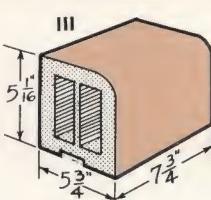
4D20
Same, square
edge, 4D10



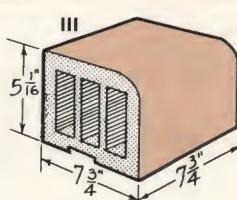
4D20B
Same, square
edge, 4D10B



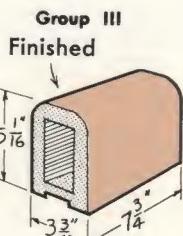
4D20A
Same, square
edge, 4D10A



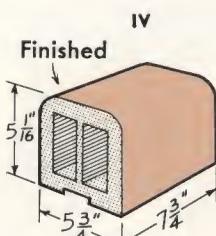
4D260
Same, square
edge, 4D160



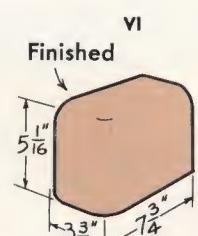
4D280
Same, square
edge, 4D180



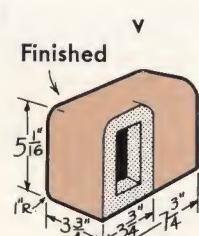
4D20D
Same, square
edge, 4D10D



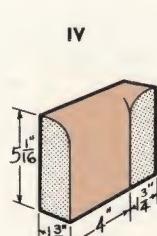
4D260D
Same, square
edge, 4D160D



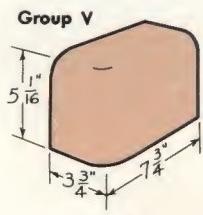
4D25
Same, square
edge, 4D13



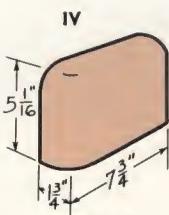
4D24X27R
4" Reveal



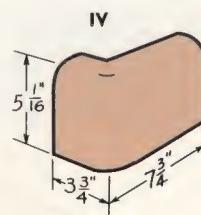
2D27L
2" Reveal



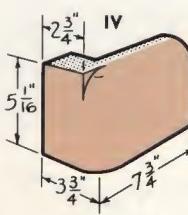
4D24CR



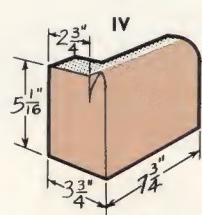
4D24AR



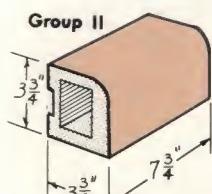
4D24R



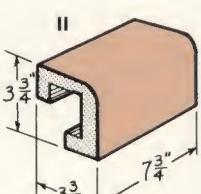
4D24X2R



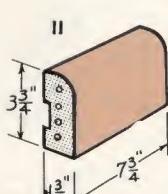
4D22X2R



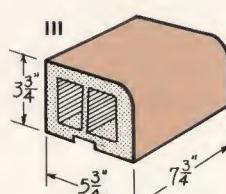
4P20
Same, square
edge, 4P10



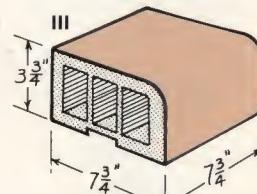
4P20B
Same, square
edge, 4P10B



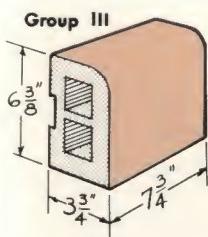
4P20A
Same, square
edge, 4P10A



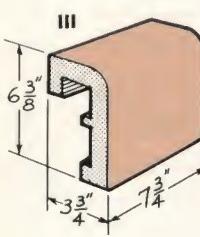
4P260
Same, square
edge, 4P160



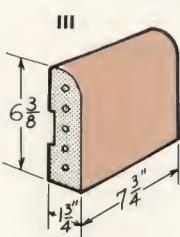
4P280
Same, square
edge, 4P180



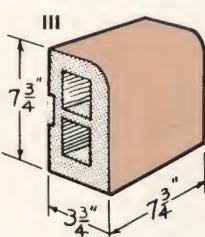
4N20



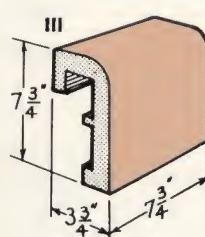
4N20B



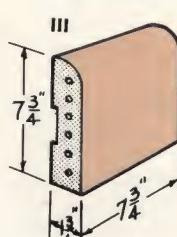
4N20A



4W20
Same, square
edge, 4W10



4W20B
Same, square
edge, 4W10B

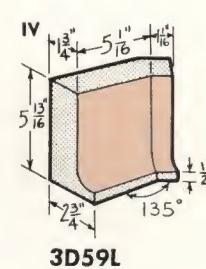
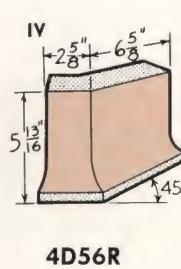
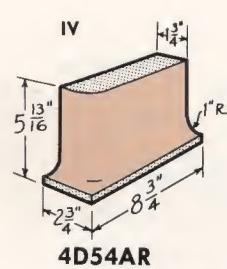
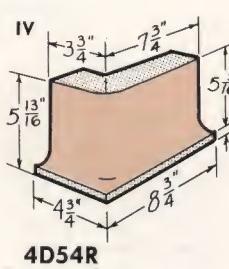
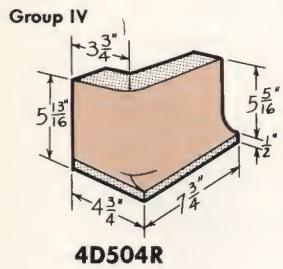
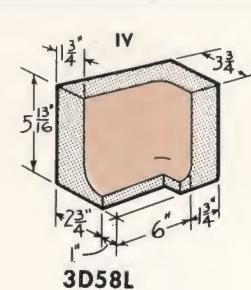
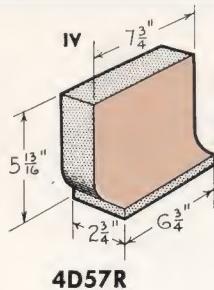
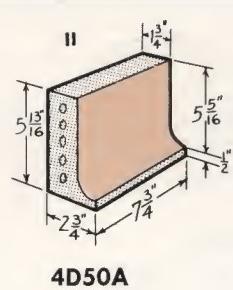
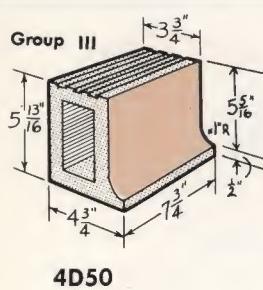


4W20A
Same, square
edge, 4W10A

Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

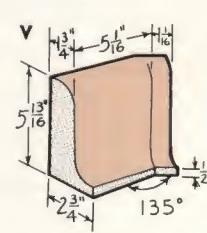
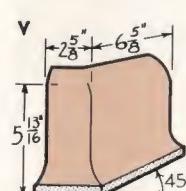
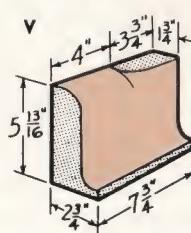
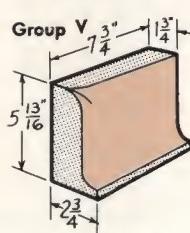
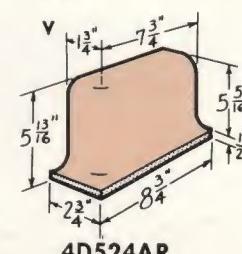
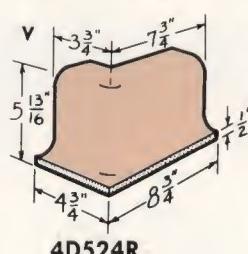
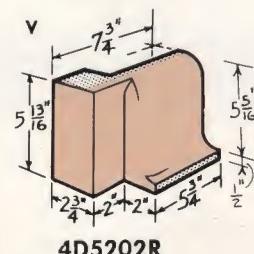
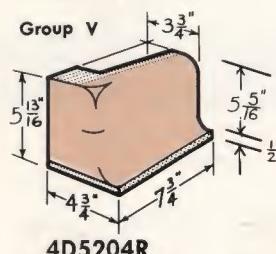
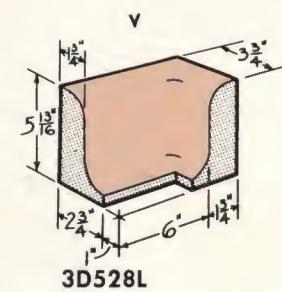
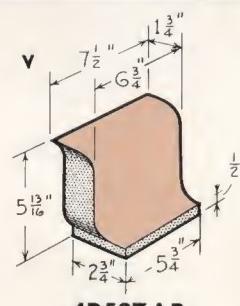
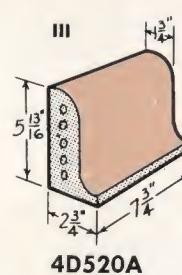
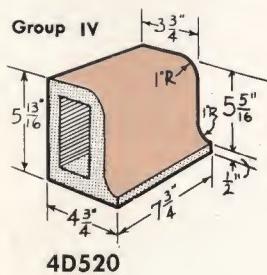
S

COVE BASE STRETCHERS AND FITTINGS



Octagons

ROUND TOP COVE BASE



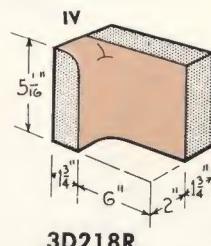
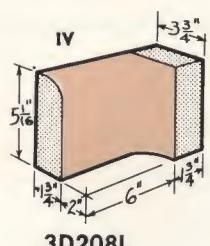
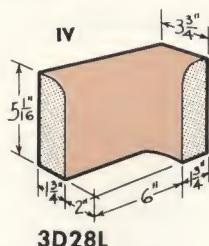
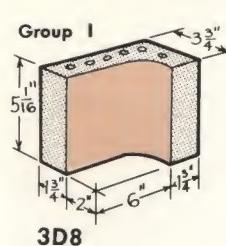
Octagons

Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

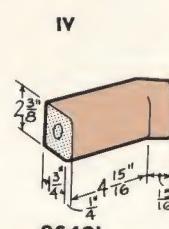
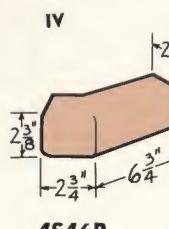
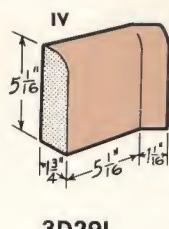
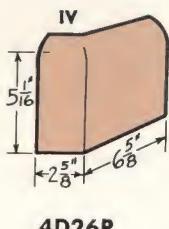
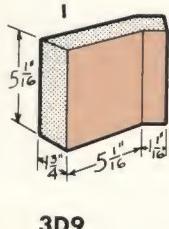
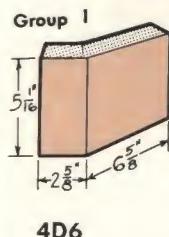
SUPPLEMENTARY SHAPES

nominal 5 1/3" x 8" face—"4D" SERIES

COVED INTERNAL CORNERS

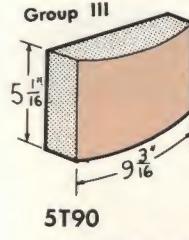


OCTAGONS (45°)—FIELD AND CAP UNITS



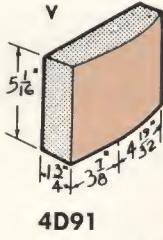
RADIALS—FIELD, CAP AND BASE UNITS

Stretcher



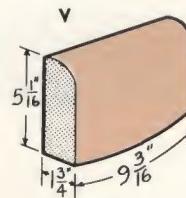
Also available
5S90—2 3/8" high

Starter

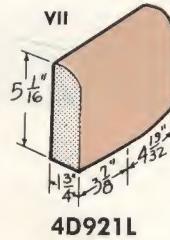


Also available
4S91—2 3/8"

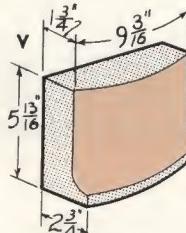
Stretcher



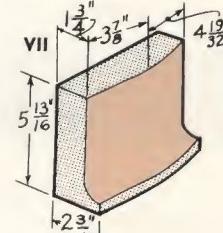
Starter



Stretcher



Starter



S

Note: INTERNAL radial shapes are similar in numbering and dimensioning. In ordering by number, simply prefix the letter "I" to the corresponding external shape number.

Internal radial shapes are manufactured for a radius of 48" as a standard.

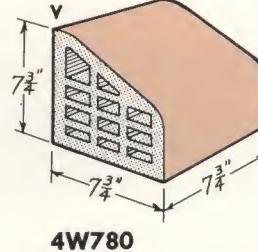
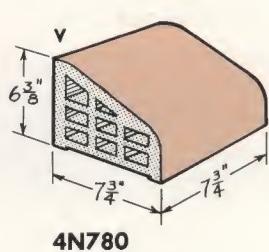
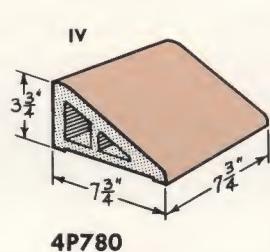
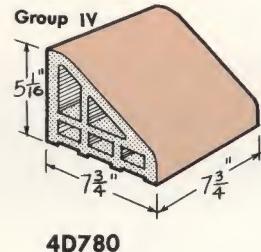
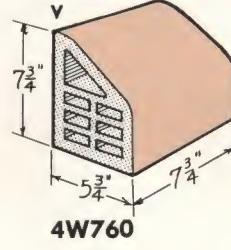
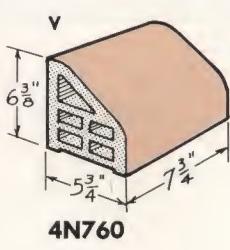
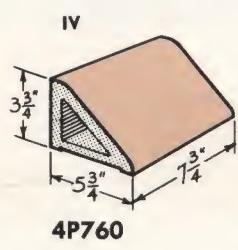
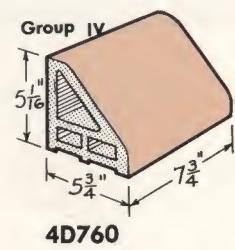
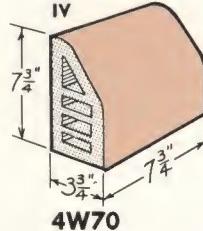
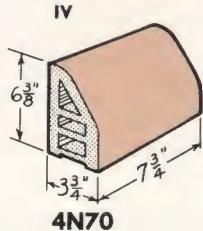
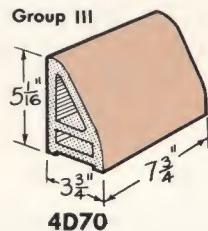
Note: Standard external radii for the above shapes are 12" and 24". Standard internal radius is 48". In ordering, prefix radius in inches to shape number (Example: 24-5T90 would be a field stretcher for a 24" external radius.)

Non-standard radii in increments of 6" will be furnished. Special dies required must be provided by the purchaser and non-standard radii Group III shapes will be Group VI, Group V shapes will be Group X and Group VII shapes will be Group XIV.

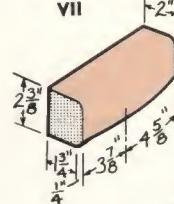
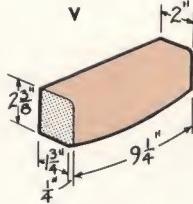
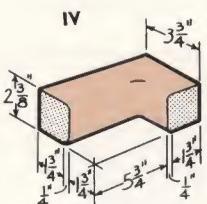
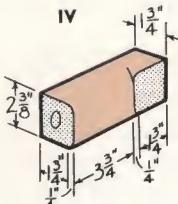
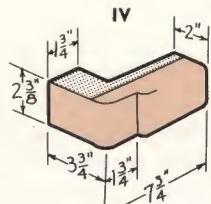
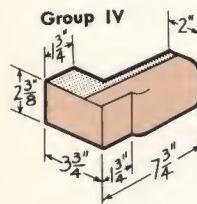
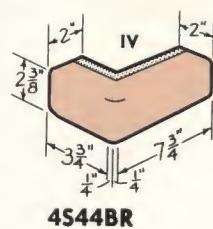
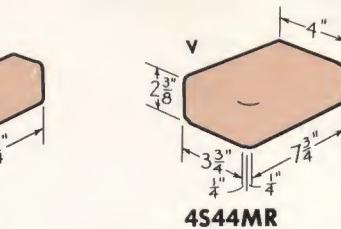
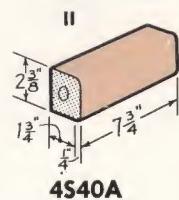
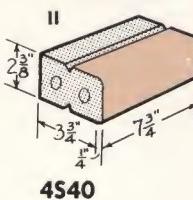
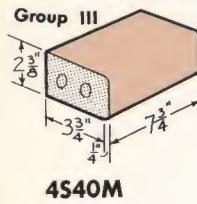
Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

SLOPE SILLS

When used with bullnose jambs, use shape 4D304 as a starter.

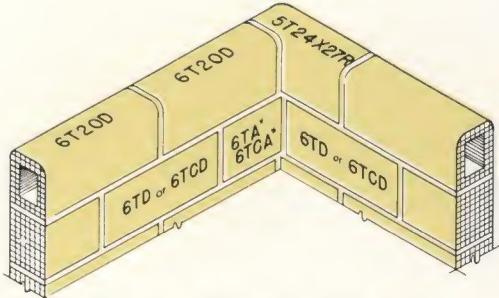


BOX CAP MOLDS

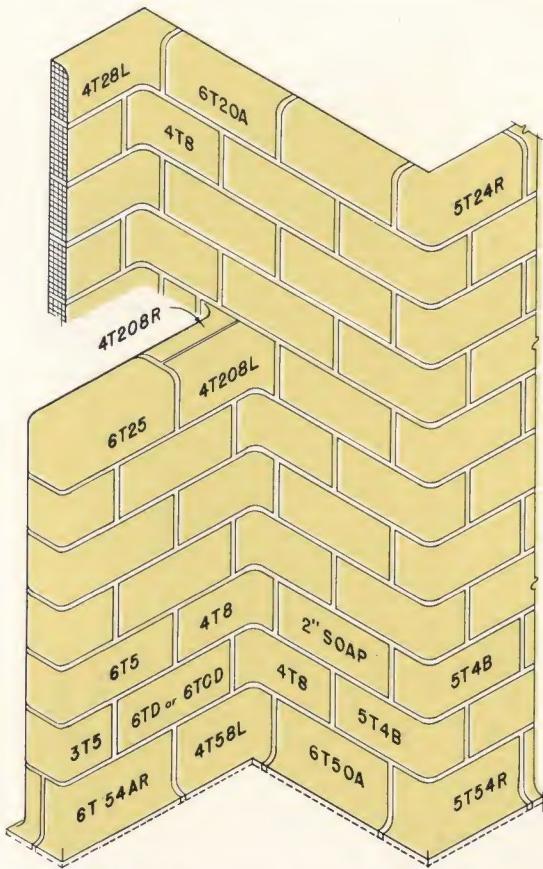


Number with suffix R denotes right hand shape; similar left hand shape takes suffix L.

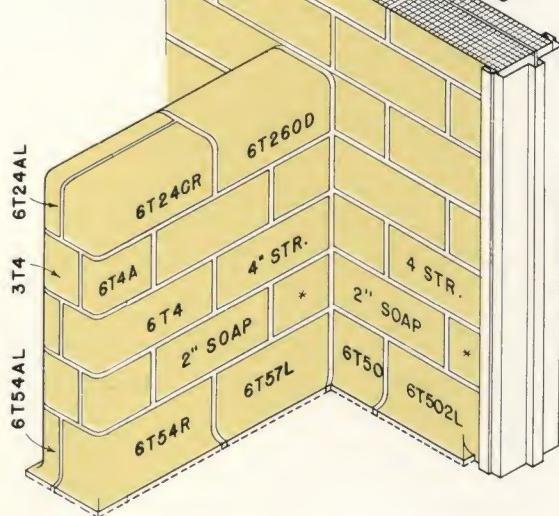
ISOMETRIC WALL DETAILS (6T SERIES)



Four Inch Double-Faced Partition Corner with Bullnose Coping.

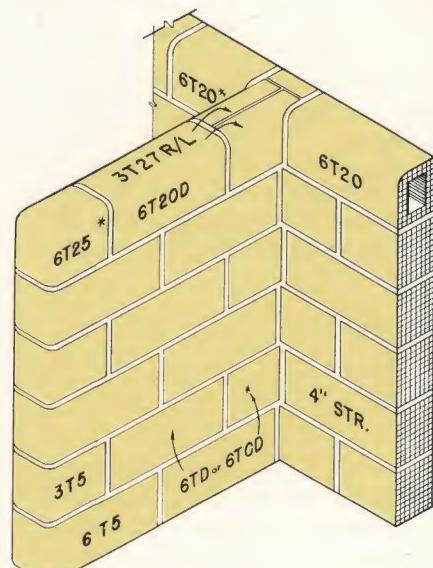


Four Inch Double-Faced Wing Wall Bonded to Main Wall with Coved Internal Corners.



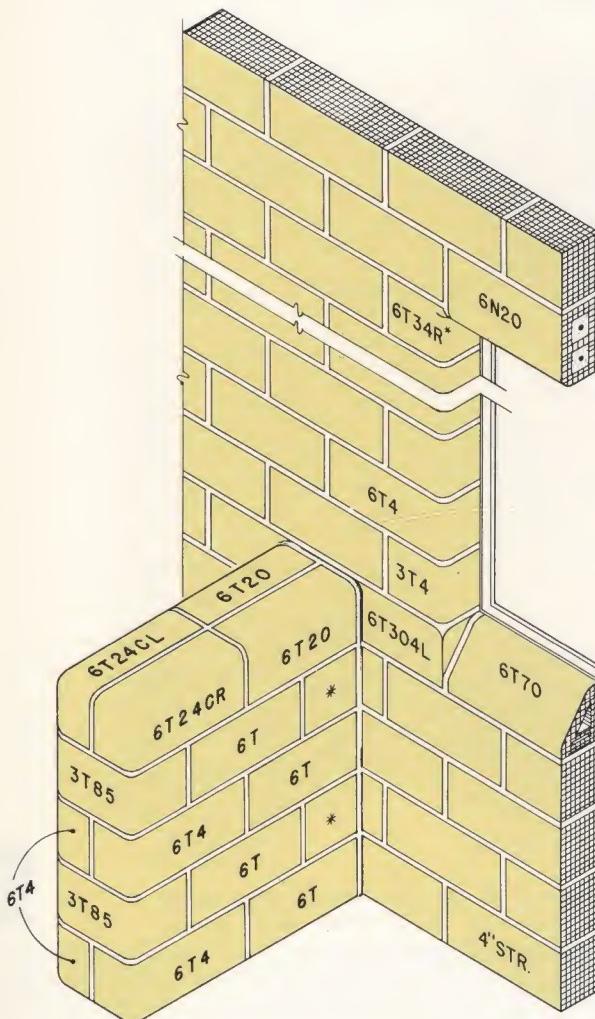
Six Inch Double - Faced Wing Wall Bonded to Main Wall with Typical Butt Joints.

The butt jointing method is used when the wing wall or partition is built after the main wall has been constructed or when there is some doubt regarding permanent location of the partition.



Four Inch Double-Faced Wing Wall Bonded to Main Wall with Square Internal Corners.

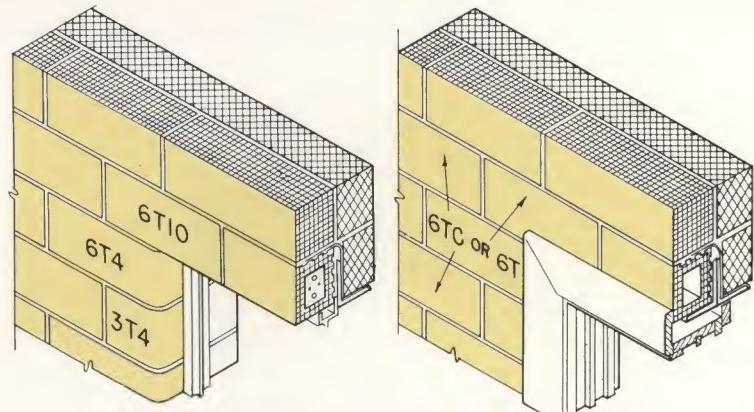
ISOMETRIC WALL DETAILS (6T SERIES)



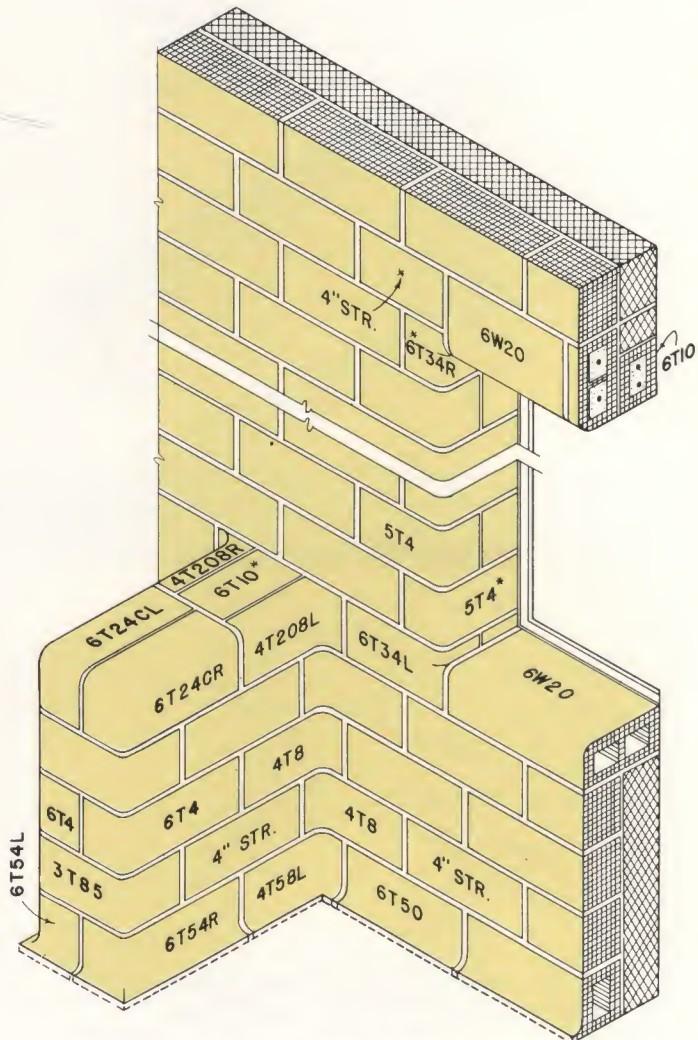
Eight Inch Double-Faced Wing Wall Bonded to Main Wall with Typical Butt Joints.

Note use of slope sill and starter at juncture of bullnose jamb and slope sill. Exact window height is obtained by cutting universal miter unit 6T34 as shown.

Note:
Modular "6T" series facing tile is designed to be laid with three courses in 16", measured vertically, and with an average of 12" horizontally center to center of vertical mortar joints.



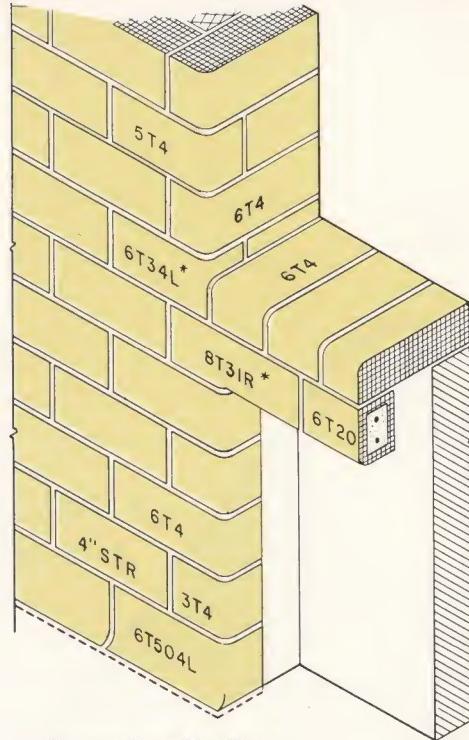
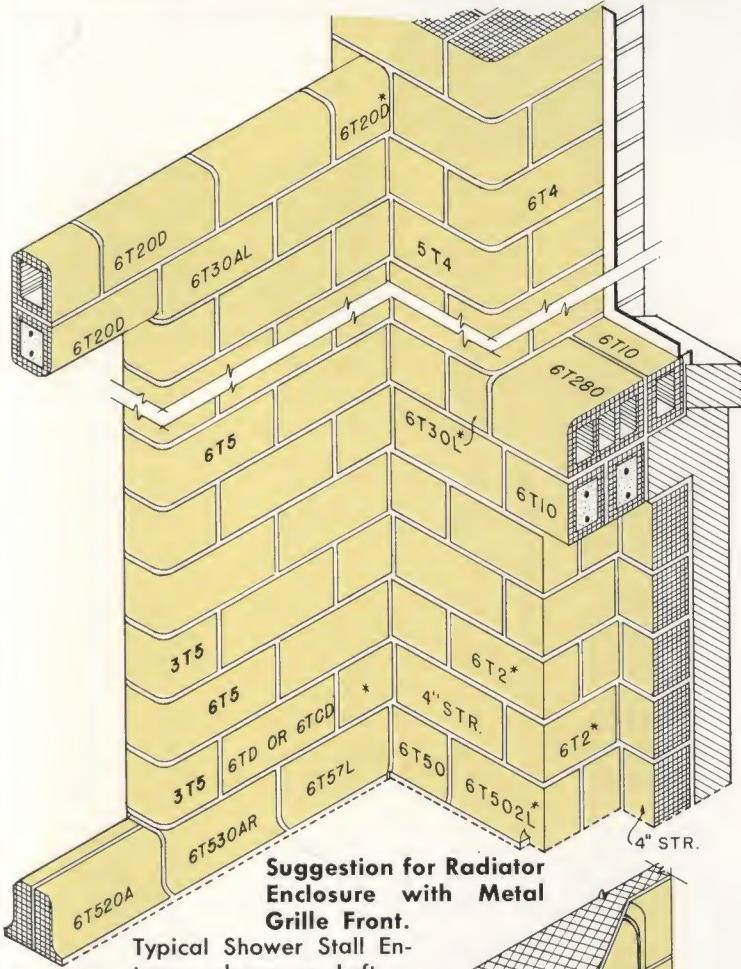
Steel Angle Lintel Construction.



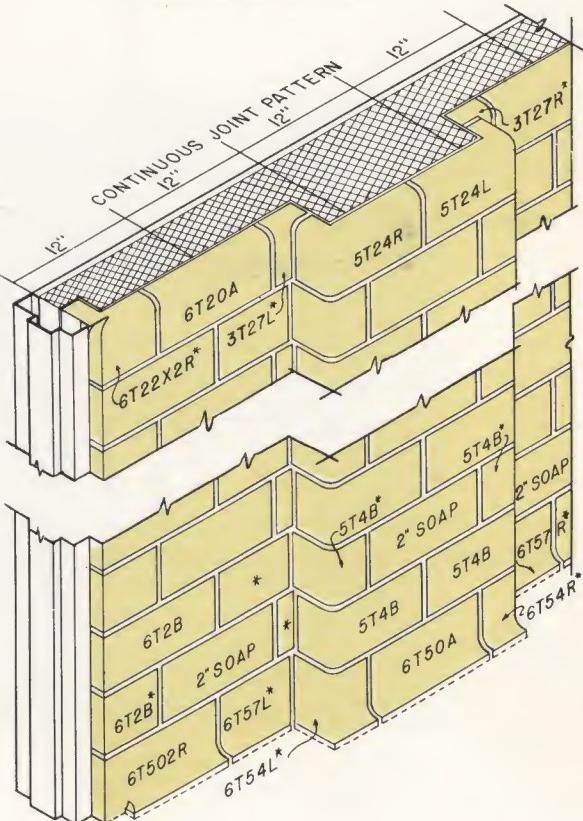
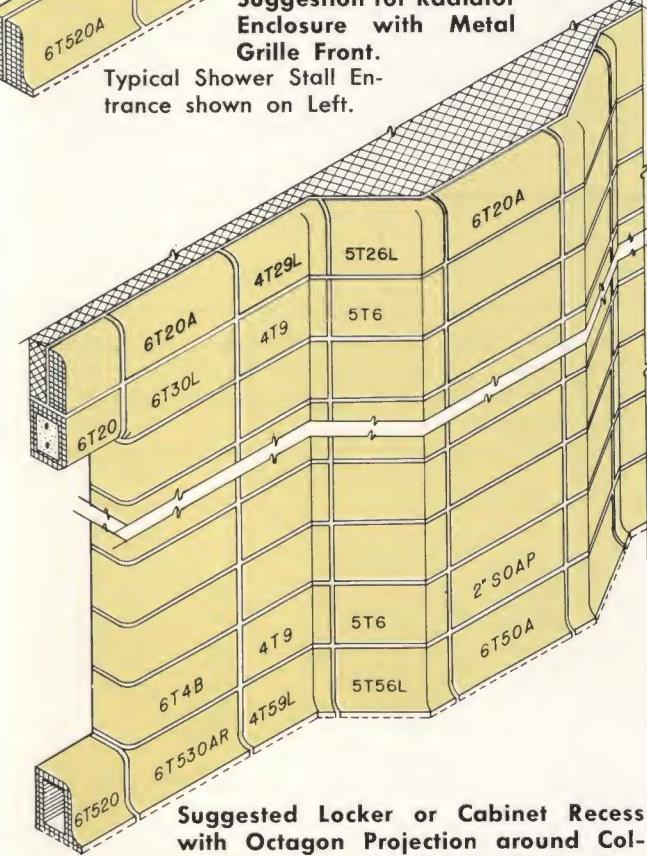
Eight Inch Double-Faced Wing Wall Bonded to Main Wall with Coved Internal Corners.

*Unit cut at job.

ISOMETRIC WALL DETAILS (6T SERIES)



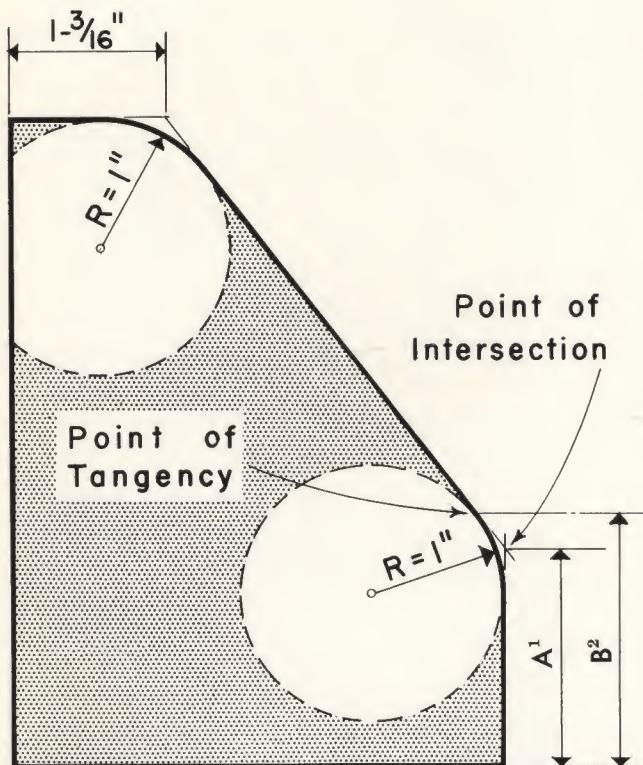
Suggestion for Open Radiator Enclosure.



Typical Door Opening in Facing Tile Wainscot and Suggested Treatment for Offset around Pilaster or Projecting Column.

*Unit cut at job.

KEY DRAWING FOR SLOPE SILL PROFILES



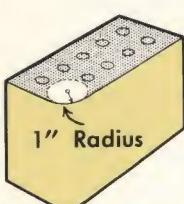
See adjacent table for A^1 and B^2 dimensions.

Unit Shape		Standard Dimensions	
Number	Page	A^1	B^2
4D70	13	1-11/16	2-3/8
4D760	13	1-7/8	2-3/8
4D780	13	2	2-3/8
4N70	13	3	3-11/16
4N760	13	3-3/16	3-11/16
4N780	13	3-5/16	3-11/16
4W70	13	4-3/8	5-1/16
4W760	13	4-9/16	5-1/16
4W780	13	4-11/16	5-1/16
4P70	13	3/8	1-1/16
4P760	13	9/16	1-1/16
4P780	13	11/16	1-1/16
6T70	7	1-11/16	2-3/8
6T760	7	1-7/8	2-3/8
6T780	7	2	2-3/8
6N70	7	3	3-11/16
6N760	7	3-3/16	3-11/16
6N780	7	3-5/16	3-11/16
6W70	7	4-3/8	5-1/16
6W760	7	4-9/16	5-1/16
6W780	7	4-11/16	5-1/16
6P70	7	3/8	1-1/16
6P760	7	9/16	1-1/16
6P780	7	11/16	1-1/16
8W70	15	4-3/8	5-1/16
8N70	15	3	3-11/16
8T70	15	1-11/16	2-3/8

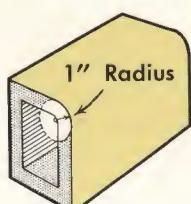
¹Dimensions given to intersection line of flat surface.

²Dimension "B" is the distance from the base of the sill unit to the point of tangency made by slope of sill and lower arc.

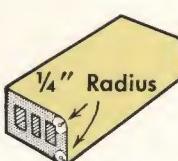
STANDARD RADII FOR ALL SERIES



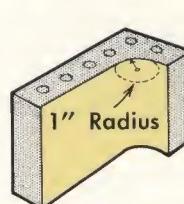
BULLNOSE CORNER



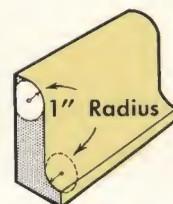
BULLNOSE SILL,
CAP OR LINTEL



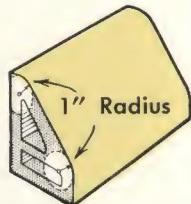
BOX CAP MOLD



INTERNAL COVE



COVE BASE



SLOPE SILL

TECHNICAL
SECTION

STARK

CERAMICS, INC.
CANTON 1, OHIO

SECTION

T

TYPICAL SHORT FORM JOB SPECIFICATION

SCOPE

The work covered under this section of the specification includes furnishing and installing all Stark Ceramics, Inc. Structural Glazed Ceramic Facing Tile specified herein, complete in accordance with this section of the specifications and the applicable drawings, subject to the general terms and conditions of the contract.

QUALITY

All units shall conform to the specifications of the Facing Tile Institute for _____ (Specify finish) of _____ quality. (Specify quality). Shading shall be consistent with the manufacturer's process and approved samples. Select sized units should be used in all walls laid in stack bond. (See Table I for available finishes and qualities, also see Facing Tile Institute specifications in the pocket on the opposite page.)

TABLE I

Available Finishes and Qualities

Select Quality	Standard Quality	B Quality
Ceramic color	Ceramic clear (904)	Ceramic color
Ceramic clear (904)		Ceramic clear (904)
Ceramic speckled (812)		Ceramic speckled (812)

SIZES AND SHAPES

The nominal face sizes of structural facing tile and fittings shall be _____ in accordance with the _____ series (specify face dimensions and series designation number from Table II below), in accordance with the wall thickness as shown in the plans.

TABLE II
Available Sizes

Series	Nominal Face Dimension	Nominal Thickness
6T	5 1/3" x 12"	2", 4", 6", 8"
4D	5 1/3" x 8"	2", 4", 6", 8"
8W	8" x 16"	2", 4"

Shapes shown in the Stark Ceramics, Inc. brochure or latest catalog shall be furnished as required for the various face sizes shown on the plans and indicated on the "finish" schedule. In general, all external corners, sills and jambs shall be bullnosed. Lintels shall be square. Miters shall be furnished as required. All internal corners shall be square unless otherwise noted. The base course shall be coved, or as indicated on the drawings. Double faced walls or partitions greater than 4 inches in thickness shall be built of two single faced units bonded by metal ties or with masonry units. Double faced nominal 4-inch partition may be constructed with two-inch soaps back to back, or single 4-inch units.

CUTTING

All cutting required at the job shall be performed with a power driven masonry saw in such a manner as to provide true and even edges.

JOINTS AND SETTING

All units shall be laid true to line and with courses level. All joints shall be compactly tooled, slightly concave or flush rubbed. The mortar joint thickness shall be approximately $\frac{1}{4}$ inch for glazed facing tile. The unit plus the mortar joint shall conform to the nominal dimensions shown in Table II.

MORTAR

Mortar shall conform to the requirements of ASTM Specifications C270-, "Mortar for Unit Masonry," except that all sand shall pass a No. 16 sieve.

Non-staining (dirt resistant) mortar shall be mortars of the same types, respectively, to which ammonium stearate or calcium stearate is added to the amount equal to 3% of the weight of the cement used. Such mortars shall be used in areas indicated on the schedule of finishes.

(Where maximum dirt resistant mortars are required because of specific job conditions, the following specification for pointing mortar may be used.)

Pointing mortar for structural facing tile walls shall be proportioned by volume with 1 part portland cement, $\frac{1}{8}$ part Type S hydrated lime and 2 parts graded (50 mesh or finer) sand to which ammonium stearate or calcium stearate is added in an amount equal to 2% of the weight of the cement used.

CLEANING

As work progresses, all surfaces shall be cleaned with burlap. At the completion of the work, they shall be scrubbed with brush and water. No acid or metal scraper shall be used in cleaning glazed tile. Completed walls shall be protected from damage.

PACKING AND STORING

All select and standard quality structural glazed facing tile units shall be packed in cardboard or paper cartons or trays. Utmost care shall be taken in unloading and stacking structural facing tile on the job. If it is necessary to stack units outside, they shall be covered with a heavy tarpaulin or other weather resistant material. The units shall not be removed from the cartons until they are at the scaffold or at the position where used.

**THIS POCKET CONTAINS THE LATEST EDITION
OF THE FACING TILE INSTITUTE SPECIFICATIONS**

specifications

**GLAZED AND UNGLAZED
STRUCTURAL FACING TILE**

APRIL, 1959

FACING TILE INSTITUTE

WASHINGTON 6, D. C., 1520 Eighteenth Street, N.W.
NEW YORK 17, N. Y., 1947 Grand Central Terminal
CHICAGO 1, ILLINOIS, 228 North LaSalle Street
CANTON 8, OHIO, 2556 Clearview Avenue, N.W.

affiliated with **STRUCTURAL CLAY PRODUCTS INSTITUTE**

DIRT-RESISTANT MORTARS

(Non-Staining)

In contrast to the non-staining characteristics of glazed facing tile, the mortar joints are normally far less resistant to soiling and discoloration because of greater permeability to water and any dirt which might be carried by it into the pores of the mortar. The permeability of the mortar and its tendency to absorb such staining materials can be significantly decreased and its washability increased in several ways. The following recommendations are taken from a memorandum of the Structural Clay Products Research Foundation dated October 30, 1956, "The Development of an Impermeable, Non-Staining Mortar".

1. Continuation of a practice currently used in raking out the construction mortar, before final set, to a depth of approximately $\frac{3}{8}$ inch and repointing with a mortar of the composition, by volume, of 1 cement, $\frac{1}{8}$ lime and 2 graded, fine (80 mesh) sand. To this mortar add aluminum tristearate, calcium stearate or ammonium stearate in the amount of 2% of the weight of the cement.
2. Where significant but not necessarily maximum dirt resistance is required, add either aluminum tristearate, calcium stearate or ammonium stearate to the mortar of construction in the amount of 3% of the weight of the cement.

SPECIFICATIONS
FOR GLAZED AND UNGLAZED
STRUCTURAL FACING TILE

April, 1959

Adopted by
FACING TILE INSTITUTE
affiliated with
Structural Clay Products Institute

BLOCK BOND AND STACK BOND WORK

It is recommended that units be specified which meet the size tolerances of plus or minus 1/16 inch on all face dimensions with a maximum difference of 3/32 inch between the largest and smallest units in accordance with Table 2, Page 4.

SELECT QUALITY CERAMIC GLAZE STRUCTURAL FACING TILE SPECIFICATIONS

1. SCOPE

These specifications cover Select Quality, Ceramic Glaze Structural Facing Tile of all colors, including Clear Glaze, of the Facing Tile Institute. Two grades, based on permissible variation in face dimensions, are covered as follows:

Grade S —available in all standard sizes of the Facing Tile Institute except 7 $\frac{3}{4}$ -inch by 15 $\frac{3}{4}$ -inch face size.

Grade SS—available in face dimensions 7 $\frac{3}{4}$ inches x 15 $\frac{3}{4}$ inches, and as noted.

2. WORKMANSHIP

The body of all units shall be clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The applied glazes shall be compounded of metallic oxides, chemicals and clays thoroughly ground together and sprayed upon a previously formed body. The units shall then be burned at high temperatures, fusing the glaze to the body, making them inseparable.

3. SIZES AND SHAPES

The sizes of units and fittings shall be as specified.

4. UNIT DESIGN

All units shall conform to the requirements of the Facing Tile Institute as to number of cells, shell and web thickness, scoring and coring.

5. COMPRESSIVE STRENGTH

The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amounts shown in Table 1.

TABLE 1
Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

6. FACE DIMENSION TOLERANCES

The total variation in the finished face dimensions of units shall be not more than the amounts shown in Table 2.

TABLE 2
Permissible Variations in Face Dimensions

Grade	Standard Face Dimension (Height, Length, Return or Reveal)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Be- tween Largest and Smallest Unit in One Lot*
		If Larger	If Smaller	
S	Inches	Inch	Inch	Inch
	2 $\frac{1}{8}$	1/16	3/32	3/32
	3 $\frac{3}{8}$	1/16	3/32	3/32
	5 1/16	1/16	3/32	3/32
	7 $\frac{1}{8}$	1/16	4/32	5/32
	11 $\frac{1}{8}$	1/16	5/32	6/32
SS**	7 $\frac{1}{8}$ 15 $\frac{1}{8}$	1/16 1/16	1/16 1/16	3/32 3/32

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.
 2. Permissible variations for units having dimensions more than 1/4 inch greater than shown in Table 2 shall be the same as for the next larger dimension.
 3. ** Other sizes are available conforming to the permissible variations of Grade SS; however, the standard face dimensions may be 1/16 inch less than the values shown in Table 2.

7. BED DEPTH DIMENSION TOLERANCES

The total variation in the bed depth (through the wall) dimension of units shall be not more than the amounts shown in Table 3.

TABLE 3
Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
1 $\frac{1}{4}$	1/8	2/16	2/16
3 $\frac{3}{4}$ —two face	1/8	2/16	2/16
3 $\frac{3}{8}$	1/8	3/16	3/16
5 $\frac{1}{8}$	1/8	4/16	4/16
7 $\frac{1}{8}$	1/8	5/16	5/16

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.
 2. Permissible variations for units having dimensions more than 1/4 inch greater than shown in Table 3 shall be the same as for the next larger dimension.
 3. No bed depth greater than 3 $\frac{3}{4}$ inches is made in trim shades or two-faced units of Ceramic Color, Clear or Speckled Glaze.
 4. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

8. DISTORTION TOLERANCES

The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the amounts shown in Table 4.

TABLE 4
Permissible Distortion

Standard Face Dimensions (Height and Length) In Inches	Maximum Permissible Distortion In Inches
2 $\frac{3}{8}$ x 7 $\frac{3}{4}$	2/32
5 1/16 x 7 $\frac{3}{4}$	2/32
5 1/16 x 11 $\frac{1}{4}$	2/32
3 $\frac{3}{4}$ x 11 $\frac{1}{4}$	2/32
7 $\frac{3}{4}$ x 15 $\frac{1}{4}$	3/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.
 2. Distortion tolerances for units having dimensions more than 1/4 inch greater than shown in Table 4 shall be the same as for the next larger dimension.

9. COLOR AND TEXTURE

The color and texture of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade.

10. FINISH

The glaze shall be free from chips, crazes, blisters, crawling or other imperfections detracting from the appearance of the finished wall when viewed at a distance of 5 feet at right angles from the wall.

11. TESTS OF FINISH

Unit faces shall pass the standard tests of the Facing Tile Institute or of the American Society for Testing Materials (Designation C126-) for Imperviousness, Chemical Resistance of Finish and Resistance to Crazing (Autoclave Test).

12. SUPPLEMENTARY REQUIREMENTS

Where opacity of finish is desired, and opaque glazes are specified, they shall not show the color of the body, nor visible stain from the opacity test.

B QUALITY CERAMIC GLAZE STRUCTURAL FACING TILE SPECIFICATIONS

1. AVAILABILITY

B Quality units are not produced to meet a specification and are available only subject to yard accumulation and prior sale. Fittings (shapes) may not be available in B Quality to meet the requirements of all jobs for which B Quality stretcher units are furnished.

2. DEFECTS

Units furnished as B Quality fail to meet one or more of the requirements of the specifications of the Facing Tile Institute for

Select Quality, Ceramic Glaze Structural Facing Tile. The defects may be:

Chippage in excess of that permitted under Section 10.

Face dimension variations in excess of that permitted by Section 6.

Color variations greater than permitted by Section 9.

Finish of many units will pass tests required in Section 11, but failure to pass such tests is not cause for rejection.

3. JOB SAMPLE

Since failure to meet one or more requirements of the Specifications for Select Quality, Ceramic Glaze Structural Facing Tile places a unit in B Grade, the defects in this quality will vary with different shipments and with different manufacturers. Maximum extent of defects in B Quality units permissible on a specific project can be determined only by reference to a job sample consisting of not less than 6 stretcher units which will be furnished by the manufacturer on request, prior to shipment. This job sample should be available at the job site throughout the installation of B Quality units and should contain units showing:

Maximum size and number of chips permissible in one unit.

Maximum variation in face dimensions between units.

Maximum color variation between units.

Maximum warpage of one unit.

STANDARD QUALITY CERAMIC CLEAR GLAZE STRUCTURAL FACING TILE SPECIFICATIONS

1. SCOPE

These specifications cover Standard Quality, Ceramic Clear Glaze Structural Facing Tile manufactured by members of the Facing Tile Institute as a production line item to conform to specifications for this material.

The faces of ceramic clear glaze units that will be exposed in place are covered with a translucent or tinted glaze in a cream or buff color range with a semi-gloss to glossy finish.

2. WORKMANSHIP

The body of all units shall be clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The applied glazes shall be compounded of metallic oxides, chemicals and clays thoroughly ground together and sprayed upon a previously formed body. The unit shall then be burned at high temperatures, fusing the glaze to the body, making them inseparable.

3. SIZES AND SHAPES

The sizes of units and fittings shall be "4D" or "6T", as specified.

4. UNIT DESIGN

All units shall conform to the requirements of the Facing Tile Institute as to number of cells, shell and web thickness, scoring and coring.

5. COMPRESSIVE STRENGTH

The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amount shown in Table 1.

TABLE 1

Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

6. FACE DIMENSION TOLERANCES

The total variation in the finished face dimensions of the units shall be not more than the amount shown in Table 2. Standard Quality ceramic clear glaze units are not furnished with ground edges nor gaged to closer tolerances than shown in Table 2.

TABLE 2

Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
5 1/16	3/32	5/32	5/32
7 3/4	3/32	6/32	6/32
11 3/4	3/32	8/32	8/32

* Size of lot shall be determined by agreement between the purchaser and the seller.

7. BED DEPTH DIMENSIONS

The total variation in the bed depth (through the wall) dimension of units shall not be more than the amount shown in Table 3.

TABLE 3
Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension	
	If Larger	If Smaller
Inches	Inch	Inch
1 $\frac{1}{4}$	1/8	2/16
*3 $\frac{3}{4}$ —two face	1/8	2/16
3 $\frac{3}{4}$	1/8	3/16
5 $\frac{5}{8}$	1/8	4/16
7 $\frac{7}{8}$	1/8	5/16

* The difference in thickness between largest and smallest two-face units in one lot shall not exceed $\frac{1}{8}$ inch. Size of lot shall be determined by agreement between the purchaser and the seller.

NOTE 1. No bed depth greater than 3 $\frac{3}{4}$ inches is made in two-face units.

2. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

8. DISTORTION TOLERANCES

The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the values shown in Table 4.

TABLE 4
Permissible Distortion

Standard Face Dimensions (Height and Length)	Maximum Permissible Distortion
In Inches	
5 $\frac{1}{16}$ x 7 $\frac{3}{4}$	2/32
5 $\frac{1}{16}$ x 11 $\frac{1}{4}$	3/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.

9. COLOR AND TEXTURE

The color and texture of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade.

10. FINISH

The glaze shall be free from chips, crazes, blisters, crawling or other imperfections detracting from the appearance of the finished wall when viewed at a distance of 5 feet at right angles from the wall, except that not more than 15 per cent of the units may have slight mechanical or glaze imperfections and small chips.

11. TESTS OF FINISH

Unit faces shall pass the standard tests of the Facing Tile Institute or of the American Society for Testing Materials (Designation

C126-) for Imperviousness, Chemical Resistance of Finish, and Resistance to Crazing (Autoclave Test).

SELECT QUALITY SALT GLAZE STRUCTURAL FACING TILE SPECIFICATIONS

1. SCOPE

These specifications cover Select Quality, Salt Glaze Structural Facing Tile.

2. WORKMANSHIP

The body of all units shall be clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The glaze shall be produced by salt and chemicals applied to a previously formed body as vapor during burning and matured and fused to the body at high temperatures.

3. SIZES AND SHAPES

The sizes of units and fittings shall be "4S", "4D" or "6T", as specified.

4. UNIT DESIGN

All units shall conform to the requirements of the Facing Tile Institute as to number of cells, shell and web thickness, scoring and coring.

5. COMPRESSIVE STRENGTH

The compressive strength of units in pounds per square inch based upon gross area shall not be less than the amount shown in Table 1.

TABLE 1
Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

6. FACE DIMENSION TOLERANCES

The total variation in the finished face dimensions of the units shall be not more than the amount shown in Table 2. Salt glaze units are not furnished with ground edges nor gaged to closer tolerances than shown in Table 2.

TABLE 2
Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)	Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
	If Larger	If Smaller	
Inches	Inch	Inch	Inch
2%	3/32	3/32	3/32
3 $\frac{1}{4}$	3/32	4/32	4/32
5 1/16	3/32	5/32	5/32
7 $\frac{1}{4}$	3/32	6/32	6/32
11 $\frac{1}{4}$	3/32	8/32	8/32

* Size of lot shall be determined by agreement between the purchaser and the seller.

7. BED DEPTH DIMENSION TOLERANCES

The total variation in the bed depth (through the wall) dimension of units shall be not more than the amount shown in Table 3.

TABLE 3
Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)	Standard Dimension Dimension of Any Unit and the Maximum Difference Between	
	If Larger	If Smaller
Inches	Inch	Inch
1 $\frac{1}{4}$	1/8	2/16
* 3 $\frac{1}{4}$ -two face	1/8	2/16
3 $\frac{1}{4}$	1/8	3/16
5 $\frac{1}{4}$	1/8	4/16
7 $\frac{1}{4}$	1/8	5/16

* The difference in thickness between largest and smallest two-face units in one lot shall not exceed $\frac{1}{8}$ inch. Size of lot shall be determined by agreement between the purchaser and the seller.

NOTE 1. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

8. DISTORTION TOLERANCES

The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the values shown in Table 4.

TABLE 4
Permissible Distortion

Standard Face Dimensions (Height and Length)	Maximum Permissible Distortion
In Inches 5 1/16 x 7 3/4 5 1/16 x 11 3/4	In Inches 2/32 3/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.

9. COLOR AND TEXTURE

The color and texture of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade.

10. FINISH

The glaze shall be free from chips, blisters, crawling or other imperfections detracting from the appearance of the finished wall when viewed at a distance of 5 feet at right angles from the wall.

SELECT QUALITY UNGLAZED STRUCTURAL FACING TILE SPECIFICATIONS

1. SCOPE

These specifications cover Select Quality, gray, cream, buff and manganese spot, Unglazed Structural Facing Tile dimensioned for use with $\frac{1}{4}$ -inch and $\frac{3}{8}$ -inch mortar joints.

2. WORKMANSHIP

The body of all units shall be clear burning, deaired fire clay burned as straight and true as careful manufacture can produce. The finished face or faces that will be exposed in place shall be unglazed with smooth finish and shall be hard burned to produce clear faces and semi-vitreous bodies.

3. SIZES AND SHAPES

The sizes of units and fittings shall be as specified.

4. UNIT DESIGN

All units shall conform to the requirements of the Facing Tile Institute as to number of cells, shell and web thickness, scoring and coring.

5. COMPRESSIVE STRENGTH

The compressive strength of units in pounds per square inch based upon gross area shall be not less than the amounts shown in Table 1.

TABLE 1
Compressive Strength

Direction of Coring	Minimum Average of 5 Units psi	Individual Minimum One Unit psi
Vertical	3000	2500
Horizontal	2000	1500

6. ABSORPTION

The average absorption of 5 units by 24-hour submersion in cold water shall not exceed 5 per cent and the absorption of any single unit shall not exceed 7 per cent.

7. FACE DIMENSION TOLERANCES

The total variation in the finished face dimensions of units shall be not more than the amounts shown in Table 2.

TABLE 2
Permissible Variations in Face Dimensions

Standard Face Dimension (Height, Length, Return or Reveal)		Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
Joint Width $\frac{3}{8}$ -inch $\frac{1}{4}$ -inch		If Larger Inch	If Smaller Inch	Inch
3%	3%	3/32	4/32	4/32
5	5 $\frac{1}{16}$	3/32	4/32	4/32
7%	7%	3/32	5/32	6/32
11%	11%	3/32	7/32	8/32

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.

2. Permissible variations for units having dimensions more than $\frac{3}{8}$ inch greater than shown in Table 2 shall be the same as for the next larger dimension.

8. BED DEPTH DIMENSION TOLERANCES

The total variation in the bed depth (through the wall) dimension of units shall be not more than the amounts shown in Table 3.

TABLE 3
Permissible Variations in Bed Depth Dimensions

Standard Bed Depth Dimension (Wall Thickness)		Maximum Difference Between Dimension of Any Unit and the Standard Dimension		Maximum Difference Between Largest and Smallest Unit in One Lot*
Joint Width $\frac{3}{8}$ -inch $\frac{1}{4}$ -inch		If Larger Inch	If Smaller Inch	Inch
1%	1%	1/8	2/16	2/16
3%	3 $\frac{3}{4}$ —two face	1/8	2/16	2/16
3%	3%	1/8	3/16	3/16
5%	5%	1/8	4/16	4/16
7%	7%	1/8	5/16	5/16

NOTE 1. * Size of lot shall be determined by agreement between the purchaser and the seller.

2. Permissible variations for units having dimensions more than $\frac{3}{8}$ inch greater than shown in Table 3 shall be the same as for the next larger dimension.

3. Variation in the bed depth of individual units is controlled by the limitations on distortion. The thickness of a unit shall be considered either the maximum or minimum thickness, whichever is the farthest from the standard dimension.

9. DISTORTION TOLERANCES

The maximum permissible distortion of the plane and the edges of the face of individual units from a plane surface and from a straight line, respectively, shall not exceed the amounts shown in Table 4.

TABLE 4
Permissible Distortion

Standard Face Dimensions (Height and Length) in Inches Joint Width		Maximum Permissible Distortion In Inches
%-inch	1/4-inch	
5 x 7%	5 1/16 x 7 3/4	3/32
5 x 11 1/8	5 1/16 x 11 1/4	4/32
3 1/8 x 11 1/8	3 3/4 x 11 1/4	4/32
7 1/8 x 11 1/8	7 3/4 x 11 1/4	6/32

NOTE 1. When convex units are laid upon a plane surface, the apparent variation is greater than the actual variation from the plane of the unit.

2. Distortion tolerances for units having dimensions more than 3/8 inch greater than shown in Table 4 shall be the same as for the next larger dimension.

10. COLOR AND TEXTURE

The texture shall be smooth and the color of the finished surface shall conform to an approved sample consisting of not less than 3 stretcher units representing the range of shade.

11. FINISH

The finished face or faces that will be exposed when in place shall be free from chips in excess of those permitted by Table 5 and shall be free from other imperfections detracting from the appearance of the finished wall when viewed at a distance of 10 feet.

TABLE 5
Chippage in Inches

	Maximum Permissible Chippage, in Inches*
In from edge	1/8
In from corner	1/4

* Maximum permissible extent of chippage from the edges and corners of a unit into the surface of the stretcher and one header face. Not to exceed 5 per cent of any shipment may have chippage in excess of the allowance in Table 5, but not in excess of 3/16 inch and 5/16 inch from edge and corner, respectively.

RECOMMENDED PACKING FOR STRUCTURAL FACING TILE

Glazed and Unglazed

1. The industry uses four standard methods of packing its products.

- (a) Paper cartons or trays
- (b) Loose in straw or hay
- (c) Double cartons (packages)
- (d) Wire bound boxes, crates or barrels

2. It is recommended that (a) packing be used for Select Quality Ceramic Glaze; Standard Quality Ceramic Glaze and Select Quality Salt Glaze, and that (a) or (b) packing be used for all other types and qualities.

3. Utmost care shall be taken in unloading and stacking facing tile on the job; if necessary to store outside, they shall be covered with a heavy tarpaulin. The units shall not be removed from the cartons until they are on the scaffold or at the position where needed.

PHYSICAL REQUIREMENTS FOR STRUCTURAL FACING TILE

Glazed and Unglazed

1. TYPE OF UNITS

Units may be multicored, hollow or uncored.

Solid masonry unit (multicored or uncored) is a masonry unit whose net cross-sectional area in every plane parallel to the bearing surface is 75 per cent or more of its gross cross-sectional area measured in the same plane.

Hollow masonry unit is a masonry unit whose net cross-sectional area in any plane parallel to the bearing surface is less than 75 per cent of its gross cross-sectional area measured in the same plane.

2. NUMBER OF CELLS

Requirements as to number of cells apply to hollow units only. Cells are hollow spaces enclosed within the perimeter of the exterior shells having a minimum dimension of not less than $\frac{1}{2}$ inch and a cross-sectional area of not less than $1\frac{1}{2}$ square inches.

Hollow units of 6-inch and 8-inch thickness shall have not less than 2 cells or rows of cells in the direction of wall thickness.

Double shell tile shall be considered as having one additional cell in the direction of wall thickness if either:

(a) The combined width of the voids between exterior and interior shells on both sides of the tile is not less than $\frac{1}{2}$ inch and the combined thickness of the short webs between the inner and outer shells is not greater than that of the long transverse webs holding the inner shells, or

(b) The combined thickness of the inner and outer shells on each side of the tile is not less than 1 inch.

The face shells of single shell tile with multicored or solid face shells at least $1\frac{1}{2}$ inches thick on both sides of the tile shall be considered as one additional cell in wall thickness, provided the volume of the cores in multicolored shells does not exceed 35 per cent of the gross volume of the face shell and the minimum distance from perimeter of core to either side of shell is not less than $\frac{3}{8}$ inch.

3. SHELL AND WEB THICKNESS

(a) Multicored units. The minimum distance from the perimeter of core to the side (face) of multicored units shall be not less than $\frac{3}{4}$ inch.

(b) Hollow units. The average overall thickness of the shells, measured between the inner and extreme outer surfaces of vertical cell hollow units, shall be not less than $\frac{3}{4}$ inch. The thickness of the webs shall be not less than $\frac{1}{2}$ inch.

The overall thickness of the side (face) shells, measured between the inner and extreme outer surfaces of horizontal cell hollow units, shall be not less than $\frac{3}{4}$ inch. The net thickness of the top and bottom shells shall be not less than $\frac{1}{2}$ inch; that is, when the top and bottom shells are scored, the overall thickness of the top and bottom shells shall be not less than $\frac{1}{2}$ inch plus the depth of the grooves. The thickness of the webs shall be not less than $\frac{1}{2}$ inch.

4. SCORING

Unless otherwise specified by the purchaser, smooth or scored back glazed units or a mixture thereof may be furnished and smooth, combed or roughened back unglazed units or a mixture thereof may be furnished.

When scored, each groove shall be dovetailed and shall be not less than $1/16$ inch nor more than $\frac{1}{4}$ inch in depth, and not more than 1 inch in width. The area covered by the grooves shall not exceed 50 per cent of the area of the scored faces.

When combed, the tile shall be scratched or scarified, prior to burning, by mechanical means which shall make scratches or scarifications on the surface of the tile not less than $1/16$ inch nor more than $\frac{1}{8}$ inch in depth, and not more than $\frac{1}{4}$ inch apart. When roughened, the die skin on the face of the tile shall be entirely broken by mechanical means, such as wire cutting or wire brushing. (The die skin may be observed within the cells of the tile.)

5. CORING

Type and direction of coring are optional with each manufacturer. Unless heavy units (priced in relation to excess weight and cost) are definitely required, maximum per cent of coring is fixed by the requirements of Sections 2 and 3. Heavy duty units may be either solid or cored not to exceed the maximum shown.

Standard Thickness Inches	Maximum Per Cent Coring
3 $\frac{3}{4}$	25
5 $\frac{3}{4}$	35
7 $\frac{3}{4}$	35

Per cent of coring shall be taken as the per cent of the gross volume of the unit removed by coring. Gross volume of the unit shall be determined to the outside of the scoring, but the material removed by scoring shall not be considered as part of the coring.

FIRE RESISTANCE PERIODS FOR VARIOUS TYPES OF CLAY MASONRY WALLS AND PARTITIONS

The standard fire test procedure to determine fire resistance periods for masonry construction is described in the "Standard Methods of Fire Tests of Building Construction and Materials", Designation ASA No. A2.1 of the American Standard Association, and adopted as standard by the American Society for Testing Materials, Designation E119—.

These specifications prescribe a fire endurance test which consists of exposing one side of the panel specimen to a standard high-intensity fire of controlled extent and severity. The performance is defined as the elapsed period before the first critical point in behavior is observed. This may be (1) the passage of flame or gas hot enough to ignite cotton waste during the fire endurance test, or (2) the passage of water during the hose stream test, or (3) the transmission of heat through the wall or partition during the fire endurance test shall not be such as to raise the temperature on its unexposed surface more than 250° F. above its initial temperature.

TABLE I
Load-Bearing Brick Faced Walls of Clay, or Shale, Structural Tile

Nominal Wall Thickness Inches	Description	Ultimate Fire-Resistance Period	
		No Plaster	Plaster Inside
8	4-in. 40 per cent solid tile plus 4-in. brick face.	Hours 3-1/2	Hours 4
12	8-in. 40 per cent solid tile plus 4-in. brick face.	6	7
12	8-in. 70 per cent solid tile plus 4-in. brick face.	10 (a)	(a)

(a) Based on wall failure under load. If based on temperature rise, the ultimate fire resistance period would be 11 hours for the unplastered wall and 12 hours for the wall plastered on one side.
NOTE: Not less than 5/8-inch of 1:3 sanded gypsum plaster required to develop the above ratings for plastered walls.

TABLE II
Load-Bearing Walls of Clay, or Shale, Structural Tile

Nominal Wall Thickness inches	Units in Wall Thickness	Cells in Wall Thickness	Minimum Percentage of Solid Materials In Units (a)	Ultimate Fire Resistance Period					
				Incombustible Members Framed Into Wall or No Framed-in Members			Combustible Members Framed Into Wall		
				No Plaster	Plaster On One Side	Plaster On Two Sides	No Plaster	Plaster On Exposed Side	
				hours	hours	hours	hours	hours	
8	1	2	43	1-1/2	2	3	3/4	1-1/2	
8	1	2	49		2	4	1-1/4	2	
8	1	3 or 4	43		2	4	3/4	1-1/2	
8	1	3 or 4	53		3	5	1-1/4	2	
12	1	3	40	2-1/2	3-1/2	4	2	3	
12	1	3	49	3-1/2	4	6	3	4	
12	2	3 or 4	45		4	6	2-1/2	3-1/2	
12	2	3 or 4	53	5	6	7	3	4	

(a) The percentage of solid material units given above, in the case of walls built up of units of different designs, is to be taken as the weighted average for the units at the courses in the wall where the average percentage is the lowest.

NOTES: All tile is to conform with ASTM specifications from the standpoint of strength and absorption. Not less than $\frac{5}{8}$ -inch of 1:3 sanded gypsum plaster is required to develop the above ratings for plastered walls.

TABLE III
Structural Facing Tile Partitions

Nominal Wall Thickness, Inches	Description	Ultimate Fire Resistance
6	Glazed or unglazed facing tile cored not in excess of 25 per cent, 2 units in wall thickness.	3 hours
6	2 inches glazed or unglazed facing tile cored not in excess of 25 per cent and 4 inches structural tile cored not in excess of 40 per cent, plastered on unglazed side with $\frac{3}{4}$ inch gypsum sand plaster (1:3 by volume).	3 hours
6	2 inches glazed or unglazed facing tile cored not in excess of 25 per cent and 4 inches structural tile cored not in excess of 40 per cent, unplastered.	2 hours
4	Glazed or unglazed facing tile cored not in excess of 25 per cent, plastered on unglazed side with $\frac{3}{4}$ inch of gypsum sand plaster (1:3 by volume).	2 hours
4	Glazed or unglazed facing tile cored not in excess of 30 per cent, plastered on unglazed side with $\frac{3}{4}$ inch vermiculite plaster.	2 hours
4	Glazed or unglazed facing tile meeting requirements of ASTM Tentative Specifications for Ceramic Glazed Structural Clay Facing Tile, C126- and for Structural Clay Facing Tile, C212-, respectively, except that the shells of solid shell horizontal cell units shall be not less than $\frac{3}{4}$ inch thick, plastered on unglazed side with $\frac{3}{4}$ inch gypsum sand plaster (1:3 by volume).	1 hour

NOTE: All plastered partitions plastered on unexposed side.

Results of fire tests on structural tile walls and partitions and composite walls of brick and tile are reported in National Bureau of Standards Report BMS92, "Fire Resistance Classifications of Building Construction", October 1942, and reproduced in Tables I and II for various typical units. The fire resistance ratings listed in Table III are based upon standard fire tests conducted at Ohio State University.

METHODS OF TESTS FOR STRUCTURAL FACING TILE

Glazed and Unglazed

1. SAMPLING AND INSPECTION

For the imperviousness, chemical resistance, crazing, opacity, compression and absorption tests, at least ten units shall be selected by the purchaser or his authorized representative.

Ten stretcher units shall be tested for a lot of 10,000 units or fraction thereof; for larger lots, ten additional specimens may be tested for each 30,000 units or fraction thereof. When less than 1,000 units of any size are ordered no samples shall be required.

The purchaser or his authorized representative shall be accorded opportunity for sampling and inspecting units at the place of manufacture, prior to shipment. At least ten days from the time of sampling should be allowed for completion of the tests. The expense of the inspection and testing shall be borne by the purchaser.

2. IMPERVIOUSNESS TEST

Standard blue-black fountain pen ink shall be applied liberally to the glazed surface of five dry specimens and allowed to remain for five minutes. The surface shall then be washed with a wet cloth and running water, and examined at a distance of five feet for staining of the finish.

3. CHEMICAL RESISTANCE TEST

A portion of the glazed surface of two of the specimens shall be submerged in a 10 per cent solution of hydrochloric acid for three hours. Another portion of the glazed surface of the same specimens shall be submerged in a 10 per cent solution of potassium hydroxide for three hours. These solutions shall be maintained at a temperature of 60 to 80° F. (15 to 27° C.). The finishes shall then be rinsed, dried and examined for changes of texture and color.

4. CRAZING TEST

The crazing test shall be made on three whole dry units previously tested for imperviousness of finish. Specimens subjected to the chemical resistance test shall not be used.

The autoclave shall be of sufficient capacity to contain all the units of the same texture, color and size. The apparatus shall be equipped with a safety valve, blow-off valve, and pressure gauge whose accuracy is within 2 per cent of the scale range, and a heater

of sufficient capacity to insure constant steam pressure within the autoclave.

The specimens shall be loosely placed above the water in the autoclave at room temperature. After fastening the autoclave head in place, the water in the bottom shall be heated from an external source. The blow-off valve shall be kept open until steam begins to escape, thereby expelling most of the air. After closing the blow-off valve the water shall be kept boiling and the steam pressure increased at a uniform rate until 150 pounds per square inch of pressure is reached within a period of not less than 60 minutes or exceeding one and one-half hours. Sufficient heat shall be applied to maintain a constant steam pressure of 150 pounds per square inch (plus or minus 5 pounds) for an additional hour.

The heater shall then be shut off and the steam pressure released slowly in not less than 30 minutes by opening the blow-off valve. The autoclave head shall be loosened, but not removed, and the specimens permitted to cool gradually to room temperature (not exceeding 120° F.) in a period not less than three hours. The specimens shall then be removed and standard blue-black fountain pen ink rubbed upon the glazed surfaces to aid in the detection and examination of failures.

5. OPACITY TEST

The opacity test shall be conducted on three dry specimens by applying standard blue-black fountain pen ink liberally to the body along a 2-inch length of the edge of the finished surface. After five minutes, the finish shall be examined for opacity.

When the same three specimens are to be subjected to the opacity and crazing tests, the opacity test shall be made first.

6. ABSORPTION TEST

The absorption test shall be made on five whole specimens or on five pieces containing not less than 16 square inches of glazed surface and of the thickness of the body, cut or sawed from five specimens. When the same specimens are to be subjected to the absorption and crazing tests, the absorption test shall be made first. The absorption test shall be made in accordance with the Standard Methods of Sampling and Testing Brick (A.S.T.M. Designation C67—) of the American Society for Testing Materials.

7. COMPRESSION TEST

Compression tests shall be made on five samples in accordance with the Standard Methods of Sampling and Testing Brick (A.S.T.M. Designation C67—) of the American Society for Testing Materials.

The same specimens used in the crazing test shall not be used in the compression test. When the same specimens are to be subjected to the absorption and compression tests, the specimens shall be dried to constant weight before subjecting them to the compression test.

FINISHES AND COLORS OF GLAZED AND UNGLAZED FACING TILE

CERAMIC COLOR GLAZE

Satin Finish

SALT GLAZE

Gloss Finish

Cream Tone

SINGLE COLOR FIELD SHADES

White

Light Gray



Sunlight Yellow

Coral

UNGLAZED

Tan

Smooth Finish

Light Green

Light Gray

Ocular Green

Cream

Aquamarine

Light Buff



Golden Buff

Gray Manganese Spot



MULTI-COLOR FIELD SHADES

Satin Finish

Cream Manganese Spot

White Mottle

Gray Mottle

Cream Mottle

Green Mottle

ACCENT COLORS



Accent Brown

Accent Black

Accent Orange

Accent Yellow

Accent Red

Accent Light Green

Accent Dark Green

Accent Light Blue

Accent Dark Blue

CLEAR GLAZE

Gloss Finish



SPECKLED GLAZE

Speckled Finish

SERIES AND SIZES

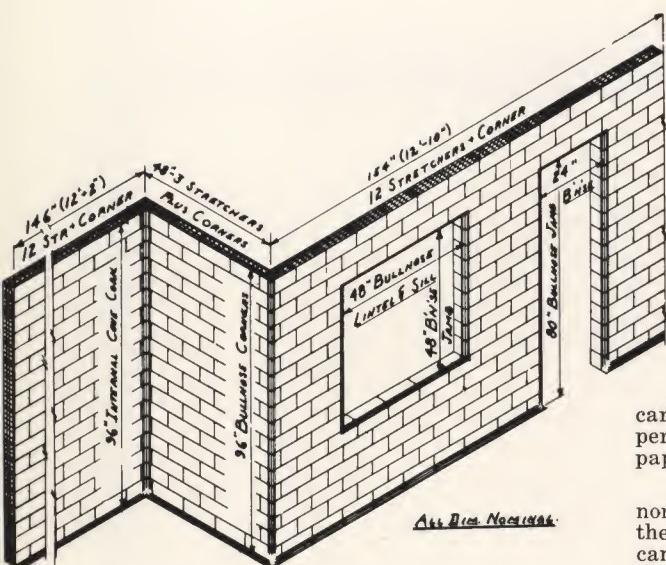
<u>Series</u>	<u>Nominal (a) Face Size</u>	<u>Unit Face Size</u>	<u>Nominal Thickness</u>
8 W (b)	8" x 16"	7-3/4" x 15-3/4"	2", 4"
6 T	5-1/3" x 12"	5-1/16" x 11-3/4"	2", 4", 6", 8"
4 D	5-1/3" x 8"	5-1/16" x 7-3/4"	2", 4", 6", 8"
4 S	2-2/3" x 8"	2-3/8" x 7-3/4"	2", 4"

(a) Nominal Dimensions include 1/4" as the thickness of the mortar joint.

(b) 8W Series furnished Ground or Gaged edge only.



RELATIVE COST AND ESTIMATE



SCHEDULE FOR ESTIMATING

WALL TYPE	Cents Per	Ceramic Glaze Select Quality Field Shade	Ceramic Clear Select Quality 904	Ceramic Clear Standard Quality 904
4" Stretcher 4 x 5 1/3 x 12	Sq. Ft.	68.6¢	65.9¢	62.6¢
2" Stretcher 2 x 5 1/3 x 12	Sq. Ft.	47.7	46.1	44.1
4" 2 Faced 4 x 5 1/3 x 12	Sq. Ft.	91.8	89.1	85.5
Bullnose Jambs, Corners Cove Corners & Base with fittings	Lin. Ft.	30.0	30.0	30.0
		(See Note)	(See Note)	(See Note)

The above approximate costs are based on present prices in full carload lots at a \$5.00 per ton freight rate. For job site estimate add \$1.50 per ton for cartage and handling. The above prices including packing in paperboard cartons.

All costs given above are for nominal $5\frac{1}{2} \times 12$ face 6T series. For nominal $5\frac{1}{2} \times 8$ 4D series, costs per sq. ft. and lineal ft. are substantially the same for corresponding units. 8W Series, nominal 8×16 face size, can be estimated to cost $\frac{1}{2}$ more per square foot than 6T Series, and the lineal foot cost factor is 50¢ per foot. This increased cost is necessary because of grinding operations on 8W Series.

Stark Ceramics, Inc., has devised a short-cut method in preparing estimates for architects and builders. This formula is:

(Length x height — actual openings) x (cost per sq. ft.) +
 (Lineal feet x \$.30) = Total material cost.

To illustrate this procedure we show the above wall section having openings and various type of shapes and fittings that are generally used on a glazed facing tile job.

Stark's short-cut method, along with the conventional unit price basis, are itemized below to show the comparisons and simplifications of the new method:

SQ. FT. METHOD (Short Cut)

Sq. Ft.

Total Wall Area	232.0			
Deduct:				
Window Open.	16.0			
Door Open.	13.3	29.3		
Net Wall	202.7	346 Pcs. 6T Str.	\$305.00	\$105.53
Total Lineal Ft. Cove and Bullnose	74.3	80 Pcs. Group I	375.00	30.00
202.7 Sq. Ft. x .68.6¢ per Sq. Ft.	= \$139.05	8 Pcs. Group II	465.00	37.27
74.3 Lin. Ft. x .30¢ per Ft.	= 22.29	25 Pcs. Group III	555.00	13.88
		6 Pcs. Group IV	725.00	4.35
		4 Pcs. Group V	895.00	3.58
Total Cost	\$161.34	Total Cost		\$161.06

UNIT PRICE ESTIMATE
(Long Method)

Long distance

29.3				
202.7	346 Pcs. 6T Str.	\$305.00	\$105.53	
	80 Pcs. Group I	375.00	30.00	
74.3	8 Pcs. Group II	465.00	3.72	
	25 Pcs. Group III	555.00	13.88	
<u>= \$139.05</u>	6 Pcs. Group IV	725.00	4.35	
<u>= 22.29</u>	4 Pcs. Group V	895.00	3.58	
<u>\$161.34</u>	Total Cost			<u>\$161.06</u>

8W SERIES

Sq. Ft

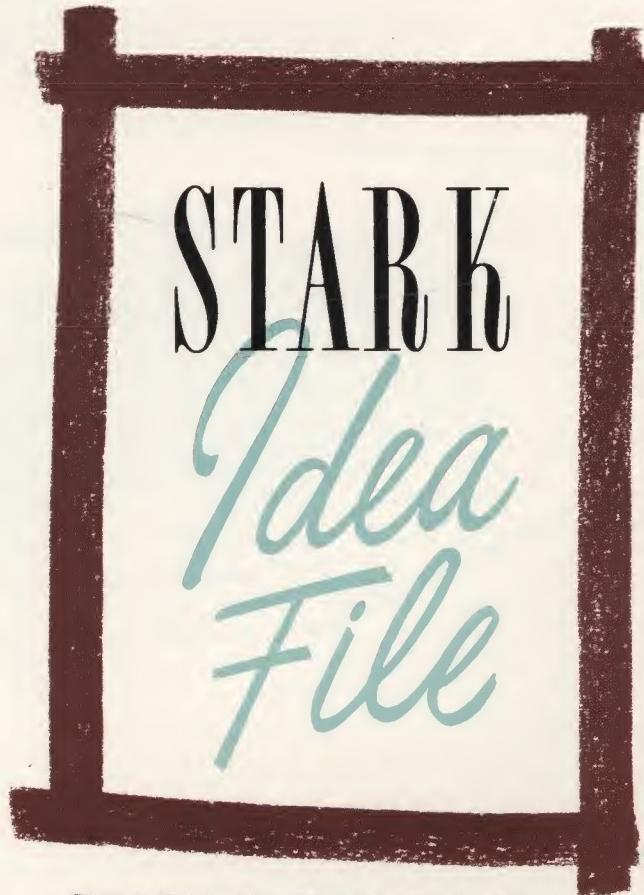
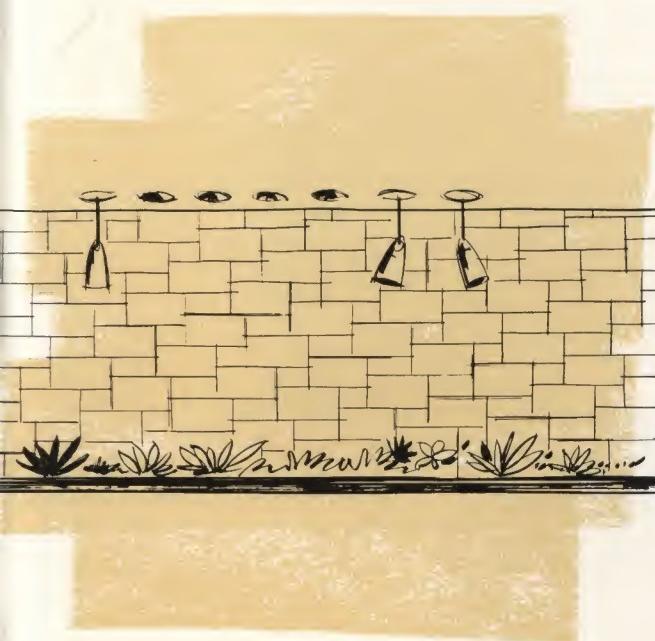
Total Wall Area	232.0			
Deduct:				
Window Open.	16.0			
Door Open.	<u>13.3</u>	29.3		
			Per M	
Net Wall	202.7	169 Pcs. 8W Str.	\$ 783.00	\$132.33
Total Lineal Ft. Cove and Bullnose		52 Pcs. Group I	863.00	44.88
	74.3	5 Pcs. Group II	903.00	4.52
202.7 x .87.7¢ per Sq. Ft.	= \$177.77	18 Pcs. Group III	1123.00	20.21
74.3 Lin. Ft. x \$.50 per Ft.	= 37.15	10 Pcs. Group IV	1293.00	12.95
Total Cost	\$214.92	Total Cost		\$214.87

In the square foot or short-cut method you will observe that the entire wall area is determined and actual door and window openings deducted. To obtain the net wall area along with the total lineal footage of cove base, bullnose corners, including the corner fittings, is relatively a simple process. With the cost per square foot known, plus cost per lineal foot for shapes, the operation is complete.

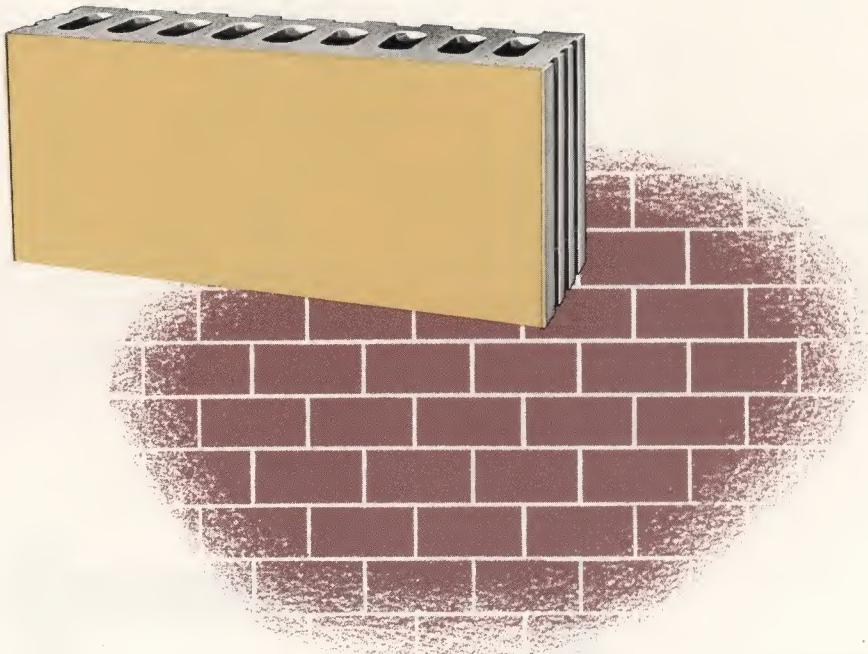
*Note—The net area figure includes the face surfaces of all shapes and fittings. The cost per lineal ft. formula covers the difference in cost of stretchers and the respective group prices.

UNITS AND WEIGHTS PER SQUARE FOOT

SIZE	Shape No.	Units per Sq. Ft. 1/4" Mortar Joints	Weight Per Sq. Ft.
3 3/4 x 5 1/16 x 7 3/4	4D	3.37	25.6
1 3/4 x 5 1/16 x 7 3/4	4DA	3.37	12.8
3 3/4 x 5 1/16 x 11 1/4	6T	2.25	23.9
1 3/4 x 5 1/16 x 11 1/4	6TA	2.25	13.1
3 3/4 x 7 3/4 x 15 3/4	8W	1.12	26.4
1 3/4 x 7 3/4 x 15 3/4	8WA	1.12	13.3

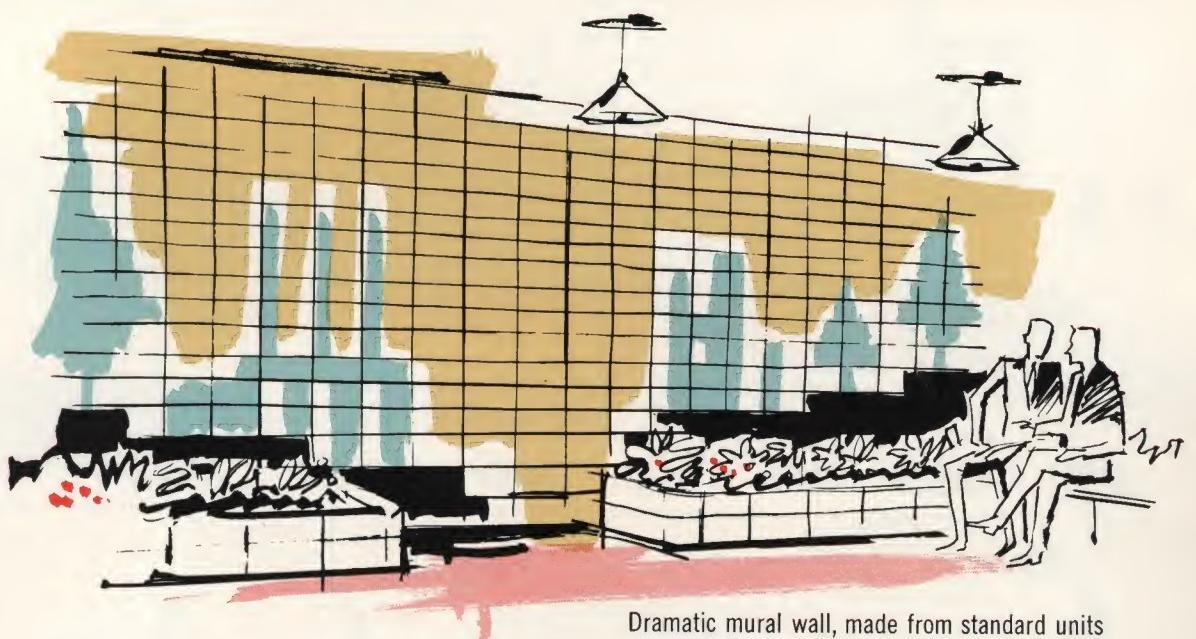


STARK CERAMICS, INC.
CANTON 1, OHIO

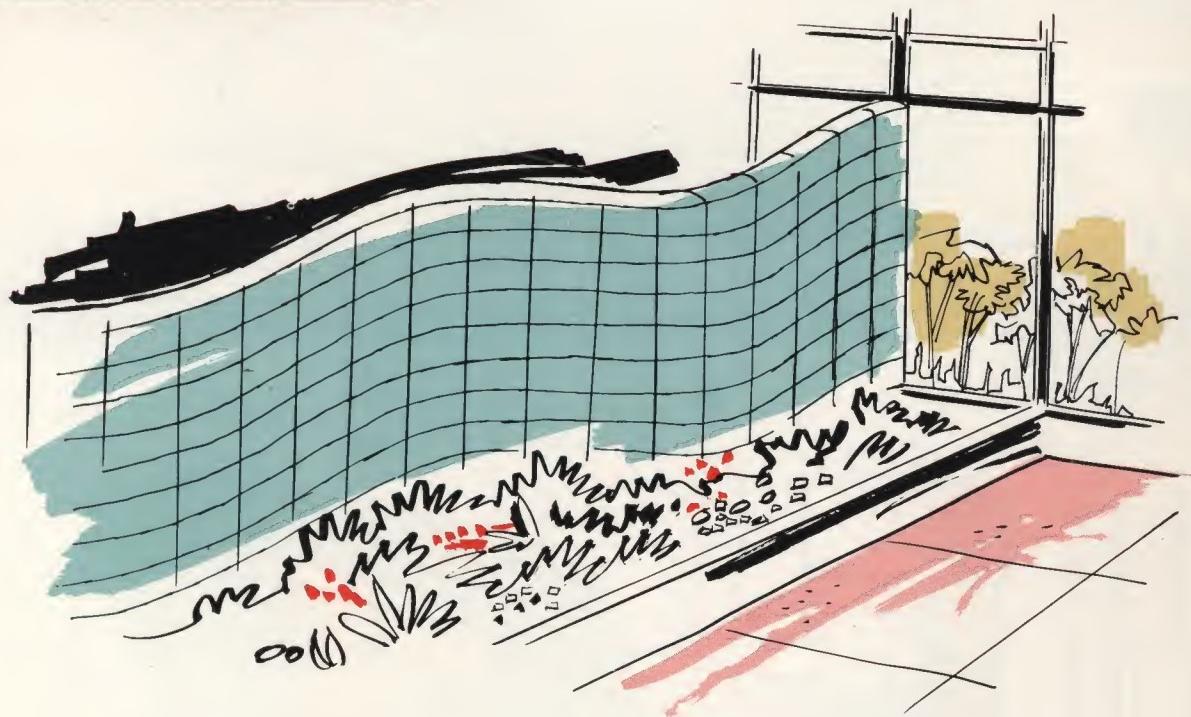


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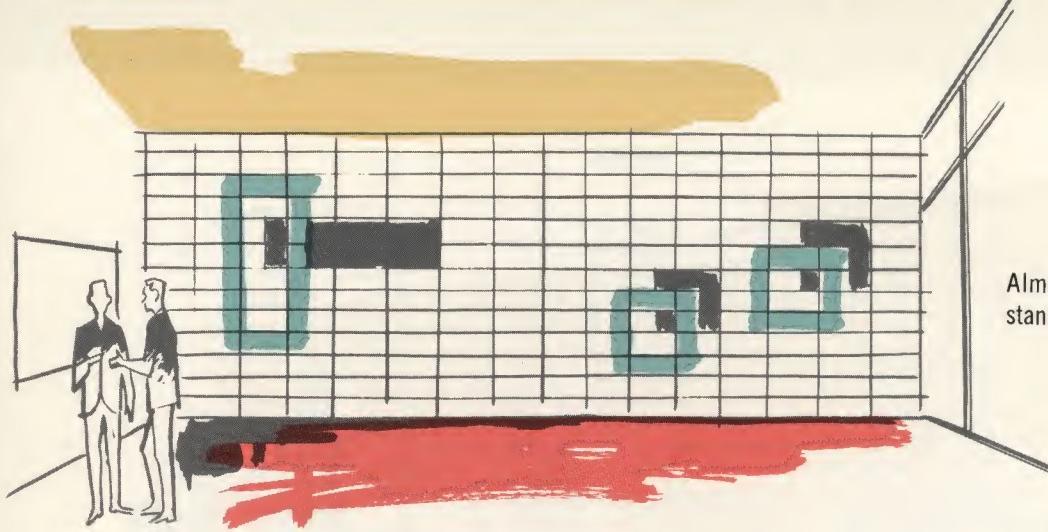
ANY OF THE IDEAS shown in this section are a result of a nationwide contest to find an unusual . . . dramatic or functional use for Stark Structural Glazed Facing Tile. It is our hope that these sketches will "spark" an idea or help to emphasize the economy, beauty and versatility to be found in genuine Stark Ceramic Structural Glazed Facing Tile.



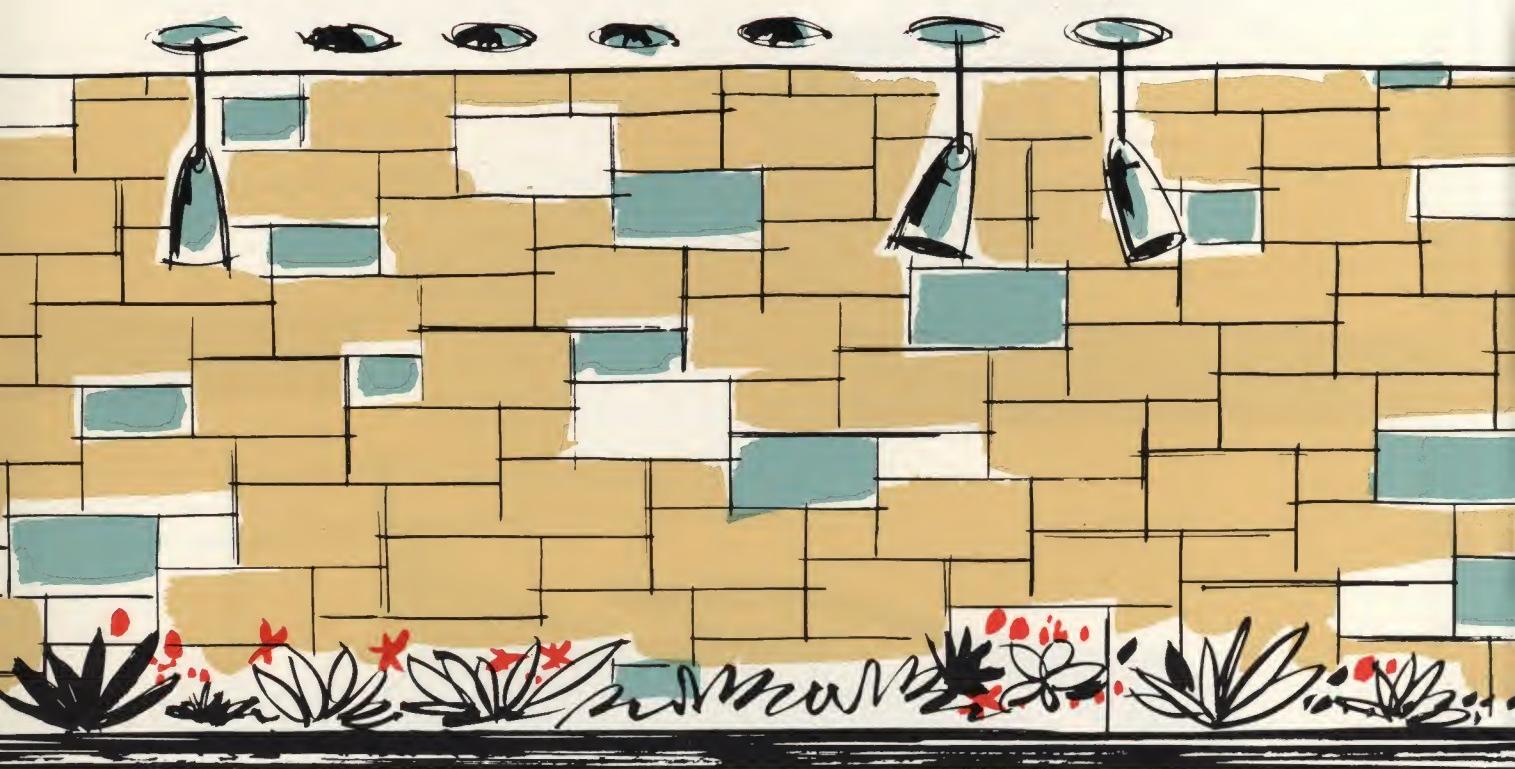
Dramatic mural wall, made from standard units and colors.



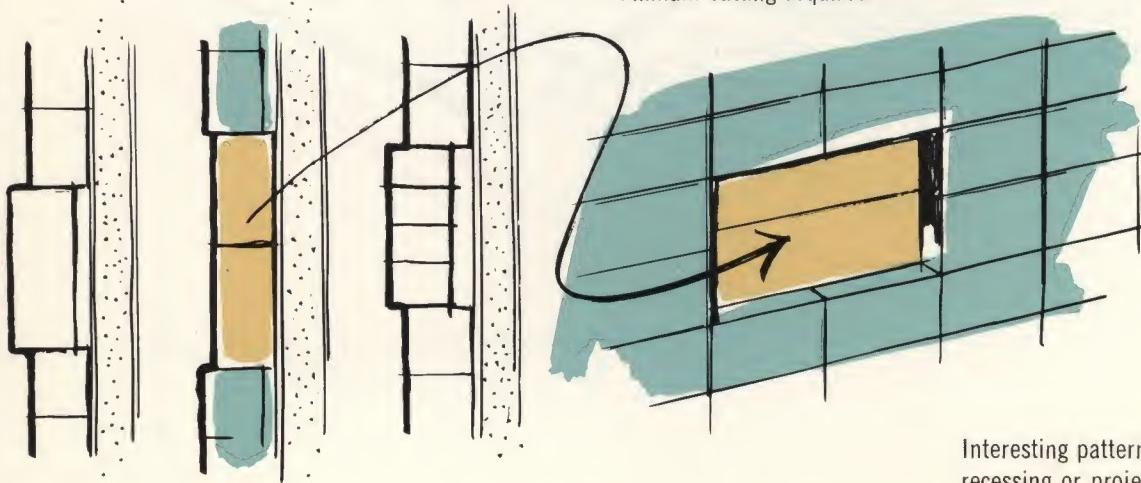
Unusual and attractive serpentine wall offers beauty, interest and exceptional strength.



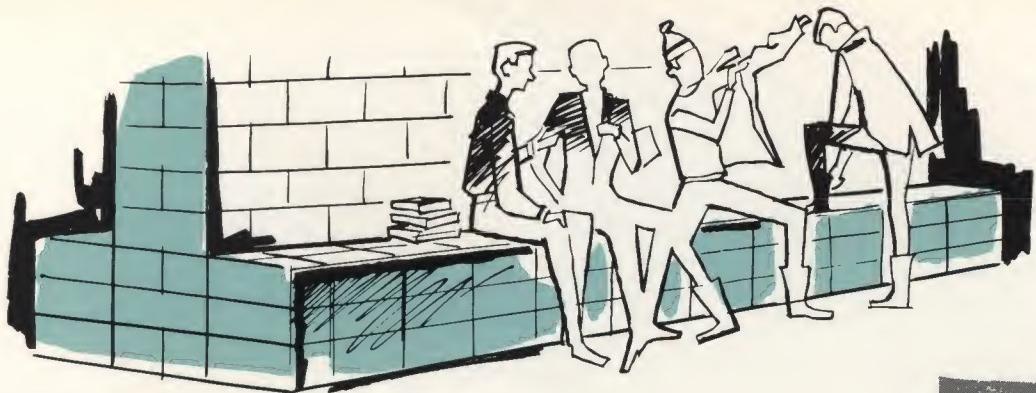
Almost unlimited design possibilities with standard units.



Random Ashler pattern — constructed with standard units — minimum cutting required.



Interesting patterns may be easily formed by recessing or projecting standard units.



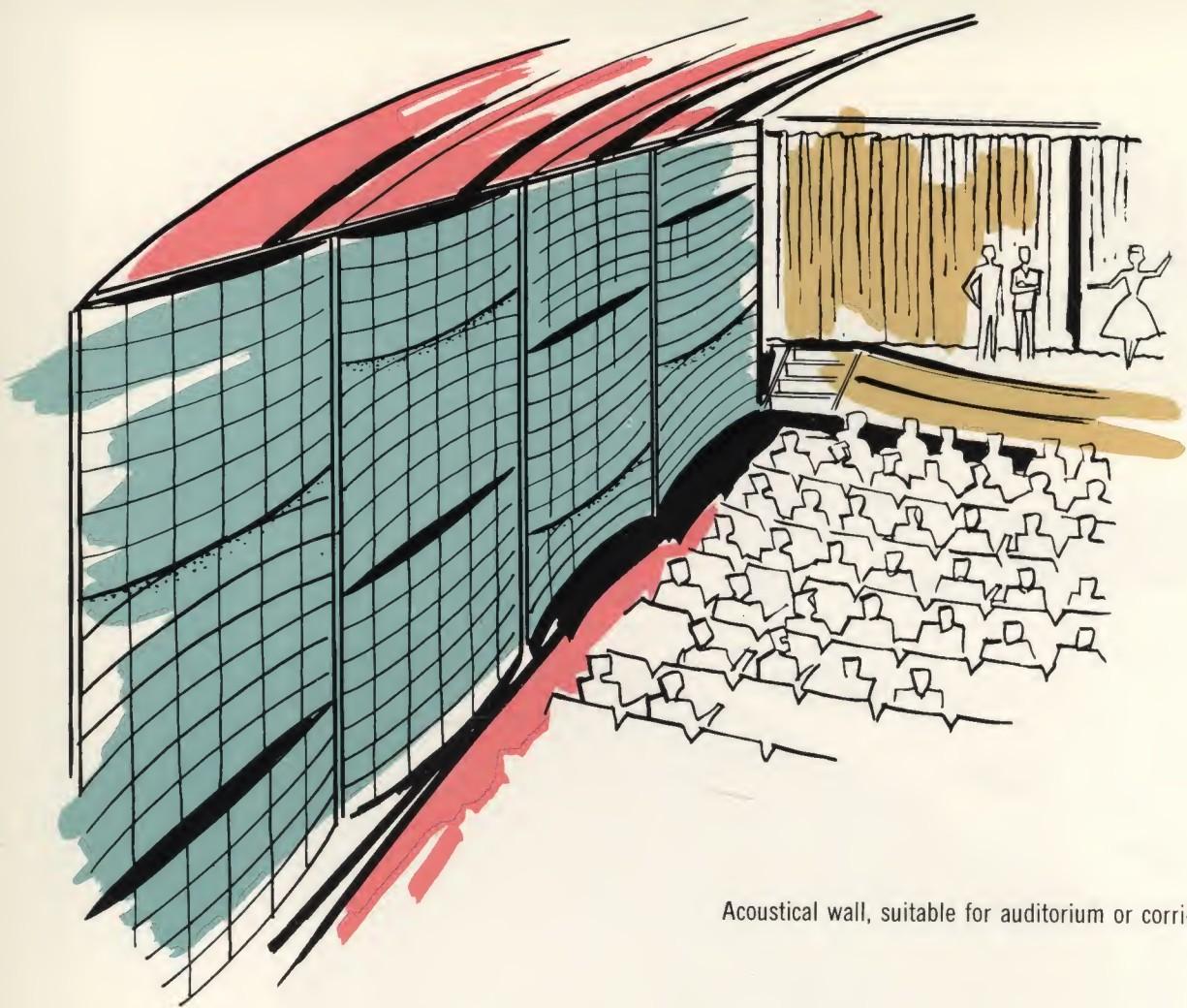
Locker room bench of standard units—practically maintenance free.



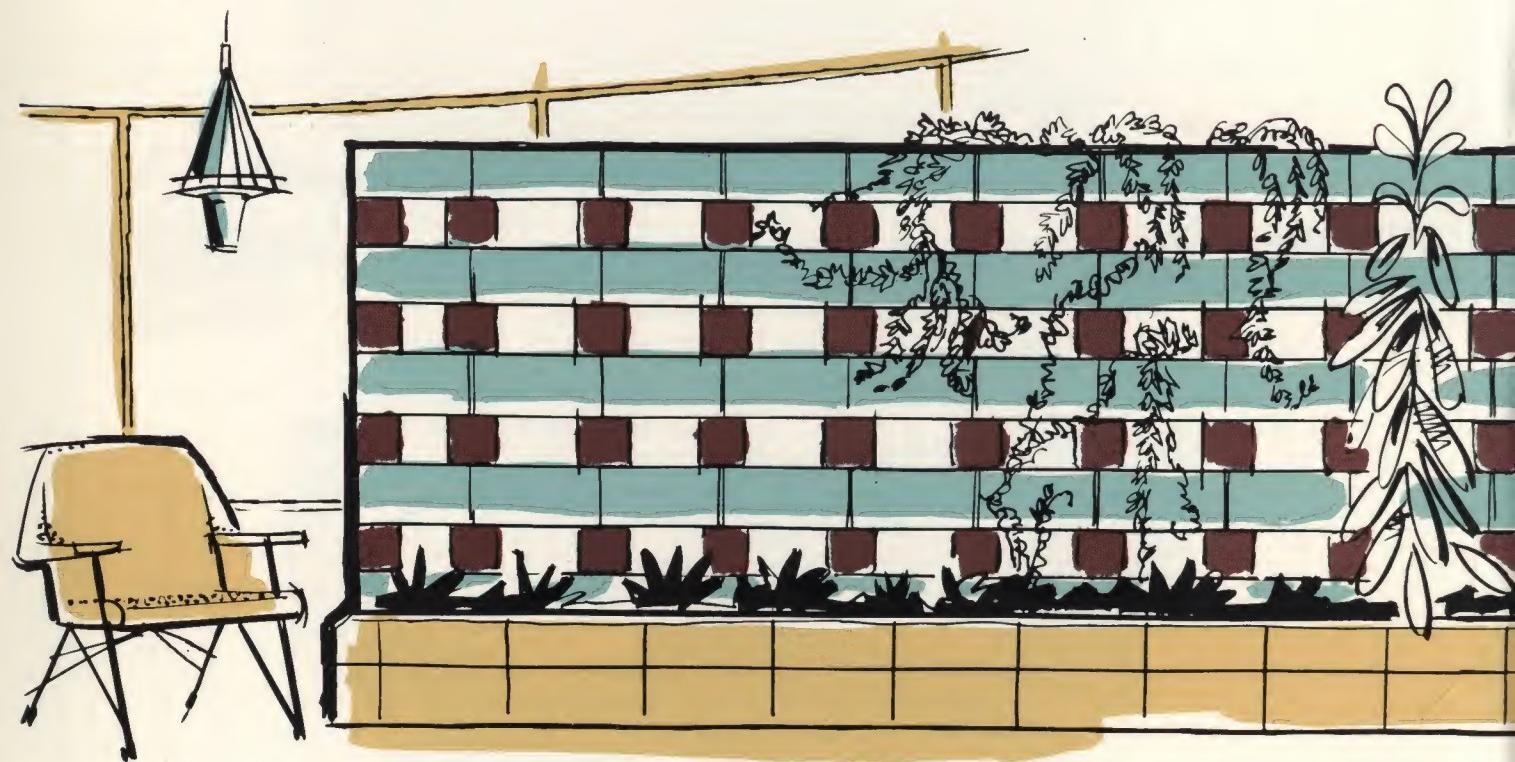
Accordion type wall offers interest, beauty and low-cost installation—wall and finish in one.



Dormitory, institutional type installation for highest sanitation—low maintenance.



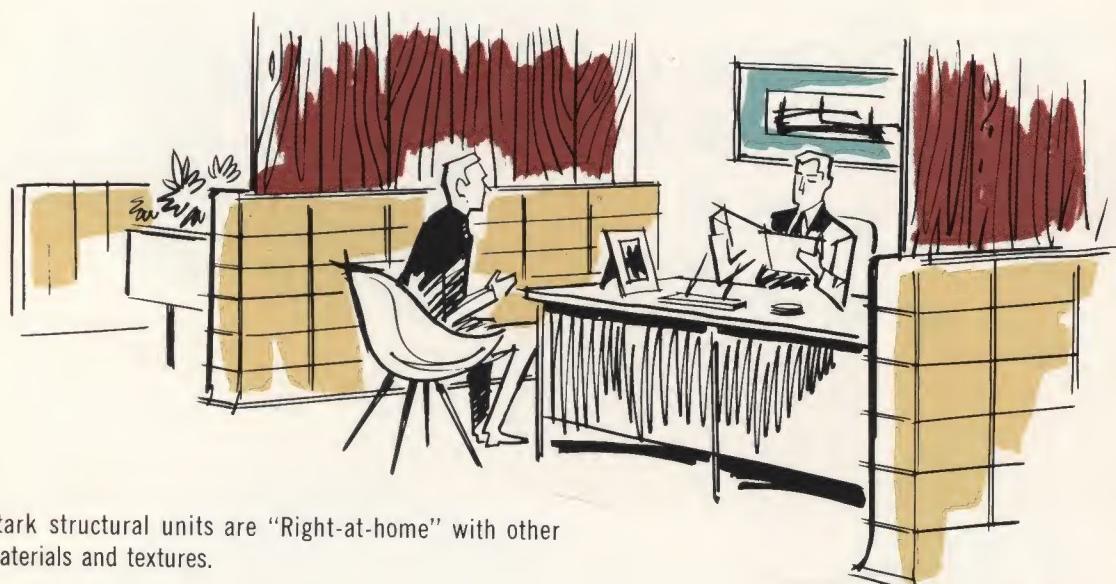
Acoustical wall, suitable for auditorium or corridor walls.



Openwork trellis design. Ideal for room divider, feature walls, etc.

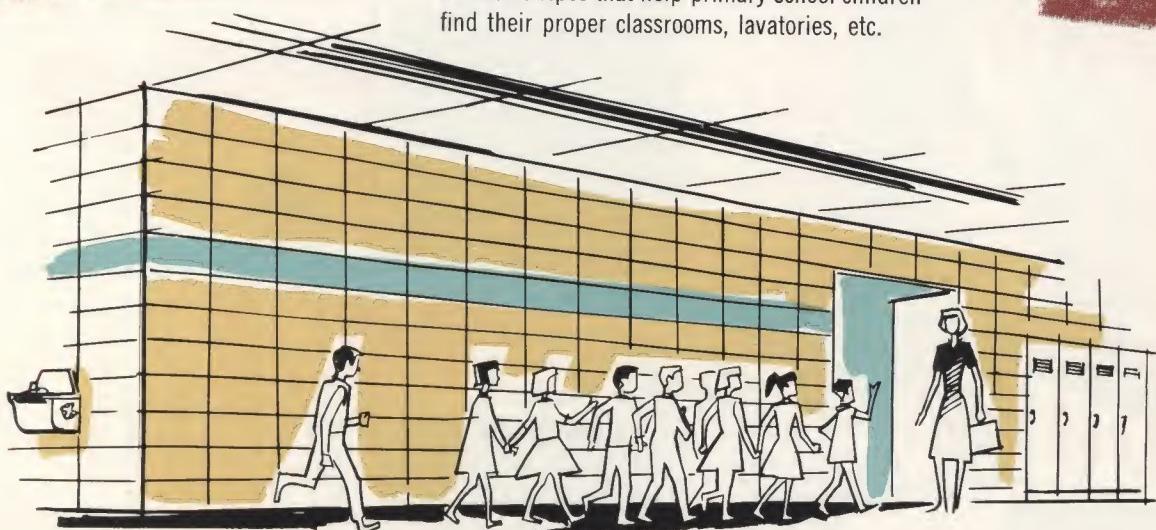


Perfect material for maintenance free, sanitary walls and closets.



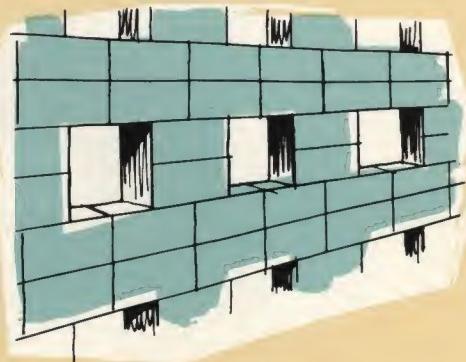
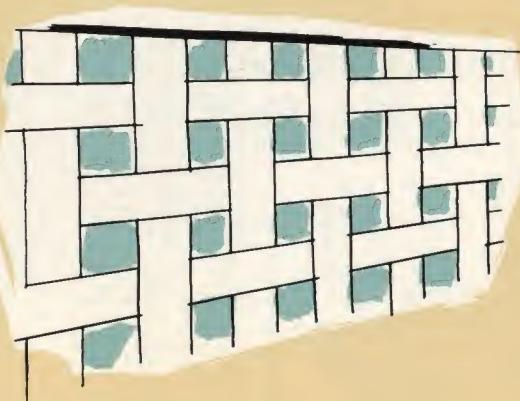
Stark structural units are "Right-at-home" with other materials and textures.

Feature stripes that help primary school children find their proper classrooms, lavatories, etc.





Perfect material for all public buildings where beauty and easy maintenance are desired.



Unlimited patterns may be formed through creative use of standard sizes and colors.



Fireplace wall of standard units—easy, low-cost installation—a lifetime of beauty.

Stark structural glazed tiles are versatile. This waiting room seat is constructed of standard units laid vertically.

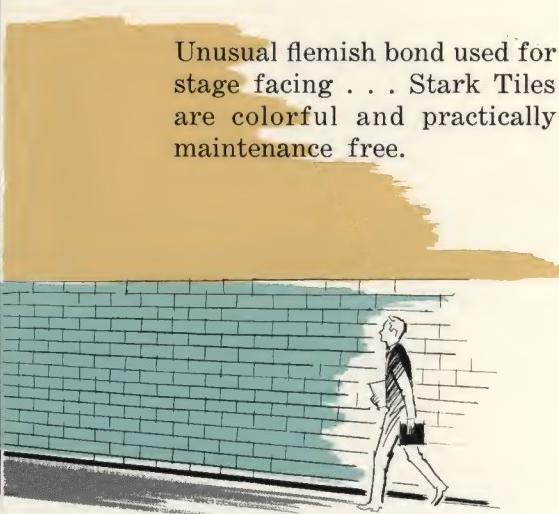


Versatile, colorful structural units can be adopted to unique designs.

Large unit structural glazed tile is ideal for monumental type buildings.



Unusual flemish bond used for stage facing . . . Stark Tiles are colorful and practically maintenance free.



Unique idea . . . planter and table are constructed of standard Stark shapes.



Stark Tiles are versatile . . . note columns formed of standard units.





A pleasant decor yet easy-to-clean and sanitary.

Accent colors placed at random add color and interest to this corridor.



